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CASE PROJECT--CONTINGENCIES APPLICABLE FOR SPECIAL EDUCATION. BRIEF PROGRESS REPORT.

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A PROJECT WHICH DEVELOPED A "DESIGNED EDUCATIONAL ENVIRONMENT" TO IMPROVE THE ACADEMIC ACHIEVEMENT OF DELINQUENT ADOLESCENT BOYS IS DESCRIBED. BASED ON THE BEHAVIOR THEORY OF LEARNING, THE PROJECT OFFERED 16 INSTITUTIONALIZED BOYS VOLUNTARY DAILY PROGRAMED OR SEMI-PROGRAMED ACADEMIC COURSES. CURRICULUMS WERE CREATED FOR EACH STUDENT ON THE BASIS OF HIS SCORE ON A PRETEST. TO RECEIVE THE EXTRINSIC REINFORCEMENTS (GOODS OR SOCIAL REINFORCERS), WHICH WERE AVAILABLE ONLY THROUGH POINTS EARNED BY ACADEMIC SUCCESS, EACH STUDENT WAS REQUIRED TO ACHIEVE A 90 PERCENT CORRECT GRADE ON AN INSTRUCTIONAL UNIT. THESE POINTS WERE CONVERTIBLE INTO MERCHANDISE, ADMISSION TO THE LOUNGE, AND PRIVATE STUDENT OFFICES. EACH STUDENT'S EDUCATIONAL BEHAVIOR WAS CONTINUALLY MEASURED TO EVALUATE THE EFFICACY OF THE PROGRAM'S PROCEDURES AND TO INDICATE TO THE STUDENT HIS OWN PROGRESS. FROM THIS INFORMATION LEARNING CAN BE TRANSLATED INTO THE DISCRETE BEHAVIORS WHICH CONSTITUTE IT, AND PROCEDURES CAN BE DEVELOPED TO ELICIT A CERTAIN BEHAVIOR TO INCREASE THE LIKELIHOOD THAT OTHER SIMILAR BEHAVIORS WILL OCCUR AND THAT LEARNING IN GENERAL WILL BE MAINTAINED. INCLUDED IN THIS REPORT OF THE PROJECT ARE A DISCUSSION OF THE PRINCIPLES OF BEHAVIORAL "ARCHITECTURE" AND PSYCHOLOGY UPON WHICH THE PROGRAM IS BASED AND A DESCRIPTION OF THE PROJECT'S ORGANIZATION, INCLUDING INFORMATION ABOUT THE ACADEMIC COURSES OFFERED. ONE SECTION DISCUSSES A TRAINING COURSE WHICH WAS DEVELOPED FOR THE STAFF AND ANOTHER CONTAINS COMPARATIVE DATA AND INFORMATION ON THE STUDENTS' EDUCATIONAL AND LEISURE BEHAVIORS. TO APPEAR IN WEBER, ROBERT E., ED., "A BOOK ON EDUCATION AND DELINQUENCY," CHAPT. 3., DEPT. OF HEW, OFFICE OF JUVENILE DELINQUENCY AND YOUTH DEV., FEBRUARY, 1966. (NH)

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Training of School Personnel

CASE Project:

Contingencies Applicable for Special Education

Brief Progress Report

August 18, 1965

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CASE PROJECT

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APPENDIX A

Summary of the Project

The present study reports the development of a designed educational environment which has been effective in developing and maintaining educational behaviors in each of a group of 15 student-inmates at the National Training School for Boys. Although the setting is a penal institution, the study has applicability to other institutions and populations, since it is part of a more general systematic approach to the investigation of learning.

When juvenile delinquents are institutionalized, they are not only removed from society, but also from the school to which they might have been going (or from which they might have dropped). Accordingly, such institutions establish schools and classes for the students. The approach of a prison school system as to course content, schedule and methodology is not too different from that of the standard educational system. A student-inmate who has reached a reading level of 4th grade in the standard school system has little hope of attaining much more in the institutional setting. In a society whose expanding technology increasingly demands education, the alienation from education of these adolescents which characterizes them on the outside, and continues inside the institution, decreases the likelihood of gainful occupation and active participation in the society.

The present report describes the project CASE, which set out to seek methods to maintain educational behaviors in the student-inmates at the National Training School for Boys. The project staff set the condition that the methods developed be of a type which could work within the constraints of such an institution. This required that the procedures be

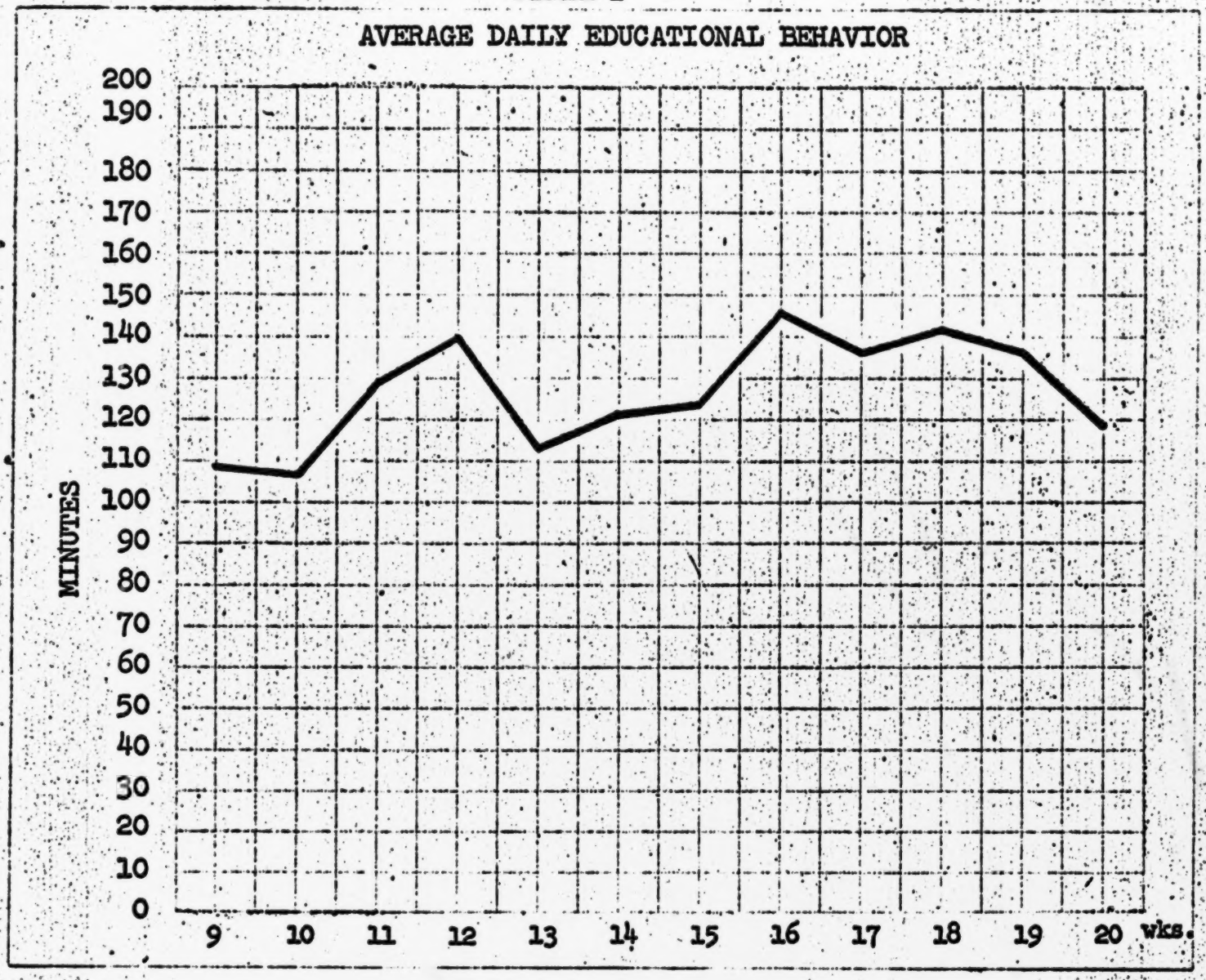
developed in continual consultation with the administration. This also required reciprocal understanding of the problems and aims of each, both the NTSB administration and the CASE project staff, so that an effective educational program might be developed to work within the institution. The project has as its ultimate goal the possibility that in the process of developing procedures to maintain educational behaviors, the institutional staff could be trained to apply these procedures elsewhere, extend them, and continue further research, planning, and education. The latter aim is especially critical since the institution is scheduled to move from its current site in less than three years.

It should be reiterated that although the educational system developed is within the context of a penal institution for delinquents, both the educational design principles and the procedures developed have applicability beyond the present setting. The educational procedures, as was mentioned, are part of a more general approach to the investigation of learning. This approach involves the design of an educational environment in which administrative contraints and contributions are explicitly treated as critical variables. Accordingly, the administrative relations established in this particular case would not be considered as limited to it, but can also be considered as part of a more general approach to the administration of designed learning environments.

The project to be reported was initiated on February 24, 1965. On March 29, 1965, the designed environment was opened to the first four student-inmates, followed by the addition of other groups of four every eight days, until the original complement of sixteen was reached. The student-inmates were available to the program from 8:10 a.m. to 11:25 a.m., Monday through Friday. The effectiveness of the program can be judged by

the fact that by the week of May 24 (the ninth week of the project), the average time spent in recorded educational activity (as opposed to mere attendance) was 109 minutes per day (out of a possible 195); the latest figures reflect the change of class schedules, lounge rates, and other stimulus changes. Data for the total period to date after baseline are presented in Figure 1.

FIGURE 1



Continual measurement of the educational behaviors was built into the project to serve two major purposes. The first ascertains the educational procedures carried out by the staff. If learning can be continually measured and recorded as it is going on, the staff can evaluate not only the progress of the student, but the educational efficacy of the

procedures it uses. Methods of evaluation may be used not only to improve procedures, but are also used as an ongoing research tool for continual evaluation and analysis of relevant variables. The second major purpose involves the behavior of the student. Continual measurement serves to indicate to the student his own progress. More critically, if educational learning can be translated into the discrete behaviors which constitute it, and which ultimately result in subject mastery, then procedures can be brought to bear upon each relevant behavior which increase the likelihood that others in the progression will occur and will serve to maintain learning in general. Therefore, it was critical that a measurement procedure be developed for such ongoing learning behaviors.

Among the procedures which have been recognized as maintaining behavior is reinforcement. Reinforcement involves making a certain consequence contingent upon a performance, which will not be available unless the specific performance occurs. The ideal situation, of course, is one in which the intrinsic consequences of the task itself maintain the behavior. For example, one reads a novel to follow the development of the characters or plot which cannot be followed unless the book is read, or one reads in order to learn. However, we are neither dealing with ideal situations, nor with students who have a history of such approach to learning. Therefore, a system of extrinsic reinforcements was developed which did maintain the student's educational behaviors. These extrinsic reinforcements were chosen because they currently did maintain general social behaviors, and because they lent themselves to being gradually altered into the more desirable intrinsic reinforcers. These extrinsic reinforcements became available (purchasable) through points. These points were given for correct answers to a programmed or semi-programmed educational problem, tests, and other academic performances. In contrast to gold stars to which they are

analogous, the points could at any time be converted to material or social reinforcers. For example, each point is worth $.01 and could be used to buy material from a Sears-Roebuck catalog, or they could buy entrance into a lounge where a jukebox and one's friends were.

These points were tied into the current system of values of the student-inmates, and were used to maintain learning and establish learning so that after an initial educational repertoire was mastered, other reinforcers and systems of values might then take over.

The program was voluntary, and individualized. The student-inmate did not have to do academic work. Once he earned his points, for being correct in his subject matter exams, he did not have to convert them into any specified reinforcer. He could choose how he wished to spend them. He could also save them. He worked at his own pace on individualized curricula, based on the results of his pretesting. The only way he could earn points was to engage in studying and completing the educational material recommended to him. A grading system was developed which gave the student-inmate immediate access to his own progress and the adequacy of his understanding. A grade of at least 90% correct was required on all programmed instruction. Upon completion of a unit of study at 90% correct responses, the student was given an exam which earned him points. The students soon learned to achieve a 90% on all programmed work.

To establish these conditions of learning, measurement, reinforcement, point-conversion, etc., a special environment was designed including group classrooms, individual booths, social lounge, measurement and instrumentation room, and a small store. This environment was developed in the basement of Franklin Hall, one of the NTSB's unused cottages.

Liaison with the prison administration was established through regular meetings during which the data were gone over. In addition, weekly classes

and seminars were held by the project director with the NTSB top administration in the programming systems being used by CASE and the rationale underlying the project. A prison correctional officer was drawn directly into the project. In the course of the project, his role changed: where formerly he had dispensed punishment and enforced the rules, he now provided the subject matter, educational units, and the reinforcements which came about from the correct answers.

The remainder of this report is concerned with the specific details of the program summarized in the foregoing section, a presentation of the results obtained, and its implications, both for future research and the project.

Reinforcements

Reinforcement was made available for those educational activities wherein progression might lead ultimately to the mastery of the subject matter being studied. For an event to be defined as being reinforcing, it must meet two criteria: (a) it must be contingent upon a particular performance; that is, it will not occur unless a specified behavior occurs, and (b) it maintains the performance which produced it. What is reinforcing to one person may not be reinforcing to another. A system of reinforcers for this population had to be developed accordingly. The development of this system has provided the investigators with procedures to ascertain, for other adolescent populations, what events can be considered reinforcers.

The following systems of reinforcement were found to be effective for the group of student-inmates of the present study:

1. Points (money). In our initial proposal we described one primary system of reinforcement through the use of points. These points

were to be earned by the student-inmate assigned to CASE by performing correctly in academic subjects. These points were to be used to buy commodities or services which would be available at CASE. These services and commodities were available for use only in the CASE environment. Items purchased could be sent to the student-inmate's home; however, no material could be taken outside the CASE project at Franklin Hall into the rest of the National Training School environment.

By not physically giving the points in a form such as money or tokens, we avoided the transference of negotiable points from one student-inmate to another. Consequently, points could not be acquired in any way unrelated to the learning specified by the CASE staff. The points earned by the students were displayed in a special rack made up of counters, cumulative recorders, and other mechanical equipment. This rack represents the bank and is located outside the entrance to the lounge. The student-inmate's total earnings and spending were indicated and always fully visible. In order to know what his wealth was, he would be required to subtract and do his own figuring. The points may also be described as generalized reinforcers (money), since they are used by the student-inmate to purchase cokes, milk, potato chips, Polaroid snapshots, entrance and time in the lounge, entrance and time in the library, smoke breaks, rental of office space, rental of books and magazines, purchase of additional classroom time, private tutoring, and material from the outside world through the use of catalogs such as Sears-Roebuck. Each point represents one penny. By this system the student-inmate was able to purchase such things as white shirts, ties, pants, Mother's Day cards, candy, flowers, and even a live chicken as a pet.

2. Being correct--social acceptance. Money, and the physical service world it represents, is not the only thing for which man works. Words such as respect, approval by one's peers, and rightness describe some of the most powerful areas of human reinforcement. These reinforcers help maintain human behavior in social groups, whether inside a prison or in a free society. Although our form of society is run on a powerful generalized reinforcer (money), each of us also works for doing good work: work we like, work we do well in, and/or work recognized by others, and work which brings us in contact with other human beings that we like. In a free society, it is a social and judicial right to be with people we love, like, or respect. It is difficult for a young adult to learn how to obtain some of this form of reinforcement; i.e., praise in educational areas, when he has little or no repertoire required to achieve competence and success in these educational and socially accepted areas. By using teaching machines, the programming of special classes, devising new testing methods, and planning a supportive environment based upon the generalized reinforcer of points, most of the student-inmates were able to enjoy that reinforcement which comes from the excitement of being right 90 to 100% of the time. They also experienced approval for "good" work not just from the CASE staff, but the approval from their peers (the other student-inmates).

At first the student-inmates worked only for cokes, chips, lounge, etc. The reinforcement shift started when a student was able, for example, to get a 100% grade on an exam in fractions, decimals, spelling, etc. (In one case, one student received less than 1% error in a final algebra exam--an area which he had received 100%

error on a pretest). The amount of words of praise and response from the staff and the students are not as of this moment accurately measurable.

About 50% of the boys in CASE have now earned enough points so that they do not need to go to work each day on mathematics and English. Instead, they could go into the lounge and sleep, or they could sleep on the "free bench" located in the entrance to the study area. However, they do not do so. The fact that they do not is some measured indication of the reinforcing effects of being correct, or getting smarter, or being able to brag about getting 100% on an exam. This newly acquired educational ability acts as a strong reinforcer and maintains a high rate of educational activity.

3. Taking an advanced course as a reinforcer for completing a basic course (status). Another useful contingency was the student-inmate status that was achieved by his working on higher level courses. The case of algebra is an example. The student-inmates had been requesting homework to do during the weekend. This way they would be better prepared to earn more points through the daily exam system given at CASE and also be able to go through their work more rapidly during the week. As we had no ability to measure what went on beyond the 3½ daily hours at Franklin Hall, we did not give out homework. However, after 2 months of continued requests, we permitted the three boys who were on an algebra program to take back algebra homework to the cottage. The response from the inmate community was fed back not only by the boys, but by the correctional officers, the psychologist, and the chaplain. In brief, the other boys not in CASE were able to see generally 4th and 5th grade reading level students do 8th and 9th grade work. Some of

the boys in the cottages who were in the 10th and 12th grade could not do some of the algebraic formulation that was taken for homework. Such statements as "I thought you were doing 2nd grade work" or "I wish we could do that in our work" were reported back as student conversation by the correctional officers. Unfortunately, this kind of report of verbal behavior is subjective, subject to much change and interpretation, and consequently is not useable as data; however, the response of some of the boys themselves in CASE was measurable. On the Monday morning following the algebra homework, we had two new requests from CASE students who now wished to take the algebra course. (Algebra has one of the lowest payoffs in points because of the amount of time required to work on the equations.) These two boys had demonstrated by their past work that they were not yet able to do algebra. We explained to them that the requirements for algebra (the prerequisites) were the finishing of the fractions and decimal programs first. Their getting the algebra program was contingent upon their going through the other two courses with at least 90% correct on all their programmed work and 90% on their final exams. Algebra became the last in a chain of mathematical programs. One of the two boys preregistered for the algebra program by immediately starting to work on the decimal prerequisite program. Working successfully on algebra had become a status symbol.

It is most difficult to measure changes in social behavior. With this in mind, CASE reports the following subjective and objective statements relative to the change in attitudinal behaviors. The student-inmates' use of language has been changing to model after the staff. The cottage officers report this new use of language as an observable. The purchase

of clothing which is worn in the project (2 white shirts, 2 black ties, a pair of slacks, and a sport shirt) are some of the physical indications of additional modeling behavior. To date, after 4½ months, the boys have not marked the walls or destroyed any of the facilities. The environment itself now is acting as a stimulus for certain behaviors: to play around, one goes to the lounge; to read and study, one goes in the library; and to do school work, one goes to the classroom, to a private office, or in the group study area. We have had no discipline problems in CASE. We have had two written requests from other inmates plus the report of many verbal requests from inmates who wish to join the project. We have been asked by all of the students now in CASE if they may be permitted to stay on and finish their academic work should the project be continued. One student-inmate who is due to leave in September has asked the correctional officer if he could turn down his pending parole on the basis that "I don't know enough yet. I need to know more to get along on the outside." The correctional officers in the cottages claim by both conversation and written reports that the CASE students who were troublesome before they entered the program have now become gentlemen and are "good cottage citizens."

This brief description of the attitudinal change has been included in this extension request to indicate, in a non-measured subjective way, that the social behaviors seem to match those behavioral goals set up by society and the NTSB as socially acceptable. It also appears that the environment in CASE is in no way aversive to the boys, but that the reinforcing elements in the environment plus the programmed instruction and the successful experiences that they have had in this educational program have made their time in CASE "enjoyable". The student can still choose each morning not to do school work if he does not wish to do so.

In fact, some of these young men have enough points so that they can go into the lounge every morning for the next few months; yet, they choose not to do so.

The Courses for School Personnel

The designed educational environment for the student-inmates of the National Training School was to be established within the constraints of the institution. Another aim of the project was to develop procedures which members of the institutional staff themselves could implement and, at a later date, apply and extend to other classes and other student-inmates.

There has been much discussion in professional organizations on the need for professionals and the absence of professionals to meet that need. For example, spokesmen for psychology report a need for trained psychologists, but are disturbed by the fact that the duration and cost of the training programs limit the number that can be produced. With regard to the present problem, if the institution's permanent staff could be trained in the procedures developed in the design of an educational environment, and in the procedures which maintain educational progress and learning by the student-inmates, the problem of the shortage of professional personnel in educational design-behavioral maintenance is lessened, since the staff members themselves carry out the task. This does not meet the problem fully, however, since one can function in this manner as a technician, or implementer of the professional's decisions. What characterizes the professional in such areas is not only knowledge of available techniques, but the ability to analyze the problem in a manner such as to suggest which of the available procedures and techniques should be used, or which procedures require development and investigation,

if they are not available. Typically, what differentiates the technician from the professional is that the technician can apply available techniques suggested by the latter. However, where no techniques are available, often the technician cannot act. Accordingly, the CASE staff felt that if the NTSB staff were to function as professionals, rather than technicians, they should be trained in the analysis itself. They should be trained both in the problem-solving approach, and prepared in the procedures and techniques available (or requiring development, if not available).

For these purposes, two classes were conducted on the NTSB premises. Each met for four months (sixteen sessions) on every Wednesday from 1:00 pm to 4:00 pm in a classroom set up on the project premises. The room was one used in the morning by the student-inmates. An ancillary effect of this arrangement was to give the participants a first-hand experience similar to some of the student-inmate experiences. Consequently, the data were closely available, and the environmental design and procedures were thereby not abstractions that someone else went through.

The Bureau of Prisons and the Office of the Attorney General cooperated fully and gave the participants three hours off, as well as course credit for successful completion of the courses. The participants in the courses were the Prison Superintendent, the Assistant Superintendent, the Captain, a Lieutenant, a Correctional Officer, and the Chief of Classification and Parole, from the administrative staff; the Chaplain, the staff psychologist, and staff sociologist, from the professional staff; the Director of Schools, the Assistant Director of Schools, the Head of Vocational Education, and three staff members of the school system, from the educational staff.

The courses were taught by two professionals with high academic recognition in their areas, using material which had been tested on college and professional populations. Harold Cohen, on leave from Southern Illinois University, where he was chairman of the Design Department, taught the course on Environmental Design. Mr. Cohen is director of the CASE project, and is also Educational Director of the Institute for Behavioral Research. The course was a programmed course and was developed in collaboration with the Institute; it has been taught at the university, and is currently being taught there in the absence of Mr. Cohen. Israel Goldiamond, on leave from Arizona State University, where he is professor of psychology, taught the course on Behavior Analysis and its Extensions. Dr. Goldiamond is Executive Director of the Institute for Behavioral Research, where he has a five-year Research Career Development Award from NIMH, and is a member of the faculty of the Washington School of Psychiatry, where this course is entering its third year. The course, with the collaboration of Mr. Cohen, is being developed as a programmed course under contract with the Office of the Surgeon General; its aim is to train professionals other than psychologists in the extension of behavior analysis to their own disciplines. It has been used in the training of second and third year psychiatric residents at Walter Reed.

The teaching of each of the courses embodied many of the principles of the other, and the procedures involved in the actual instructional methods of both (as well as the contents) were relevant to the procedures used for the student-inmates of the CASE project.

In addition to making available to the school personnel the content and programming skills of these professionals, the CASE project was able to draw on other sources for important aspects of the courses. The Institute for Behavioral Research provided textbooks and related material,

as well as automatic programming and recording equipment for demonstration and laboratory exercises. Since they provided subjects in the development of a programmed course in behavior analysis and extensions, the courses were able to tie into the contract between IBR and the Office of the Surgeon General. Such collaboration extended the effectiveness and resources available to the project.

A brief description of the courses follows:

1. Environmental design.--This course proceeds on two assumptions. One assumption is that physical and social constraints set limits and opportunities for learning and other behaviors. The second assumption is that a variety of physical and social constraints can be established to solve any specific design problem. In the attempt to solve a specified design problem, a particular set of constraints may be chosen which, although it meets the requirements of that problem, may influence learning in a specified way that some other constraints (which also meet the requirements) may not. For example, marble walls may achieve visual isolation as will drywall, but the marble will inhibit rapid change, while the drywall will not. In addition to visual isolation, the problem is to determine what else is needed.

The course stressed a problem-solving approach to the use of materials, the design of space, the arrangement of rooms for sequences of behaviors, all within the context of rational and esthetic approaches to educational progress.

One of the effects of application of these principles to design of an educational environment may be seen on the walls themselves. Significantly, not a single one of the various walls and partitions used in the educational space was defaced or marked by the student-inmates, despite the fact that writing implements were constantly available, and the walls were eminently markable.

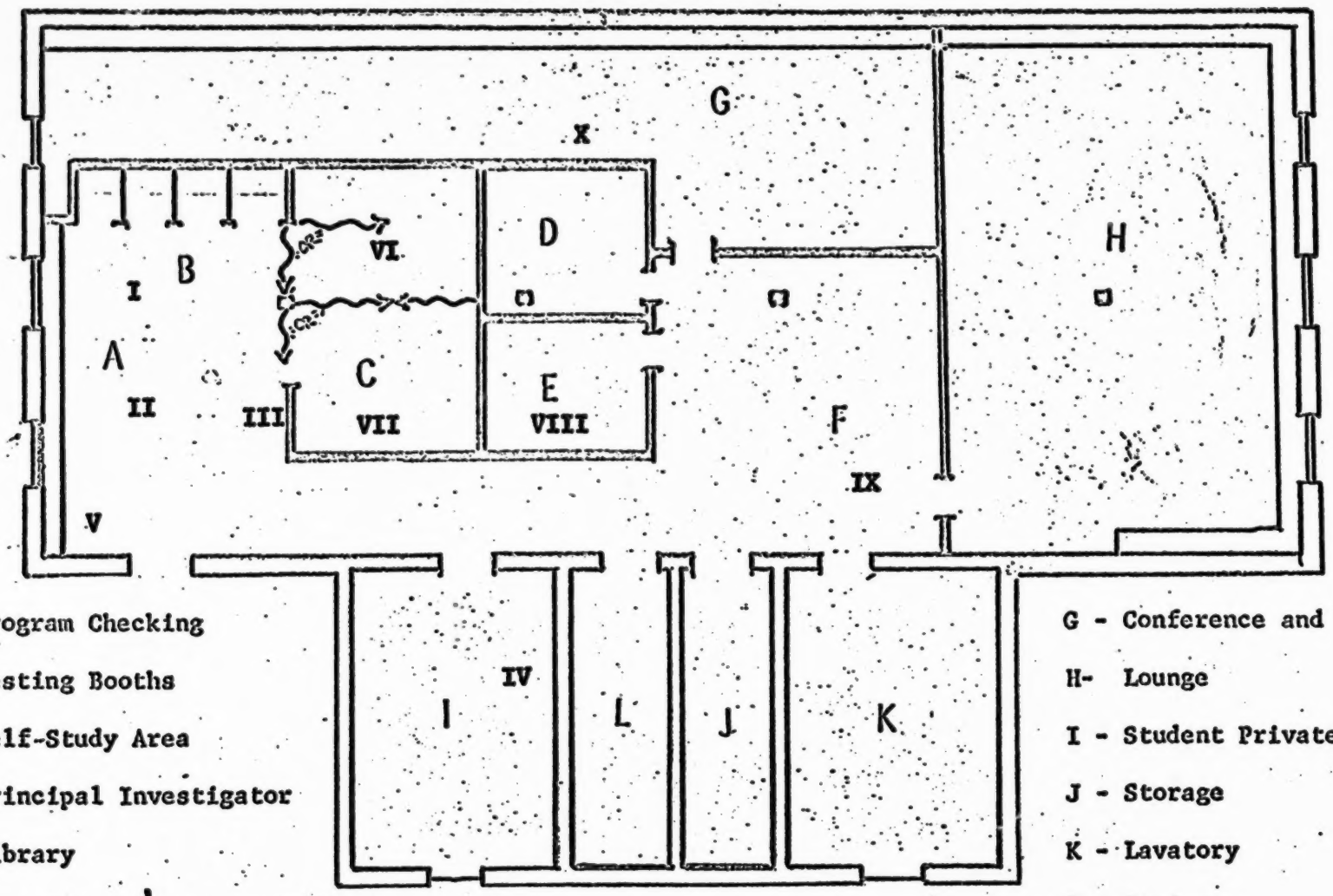
2. Behavior analysis and its extensions.--This course dealt with an analysis of the variables maintaining learning and educational progress. The explicit relation of consequences and behavior was considered, as well as the programming of these in relation to each other and educational material. An orientation of the course was to train the participant to analyze what learning might be needed in various tasks, to assay the extent to which the student-inmate was deficient in these, and to develop or utilize procedures which could alleviate these deficiencies, and have him go beyond, maintaining his progress and his learning throughout the process. Problem-solving approaches were stressed in connection with the question of finding the reinforcements which currently maintain the behavior of the student-inmates, in addition to the reinforcements which the institution has at its disposal. These were considered within the context of gradually programming the change of such consequences to the more intrinsic ones of learning for its own sake or for future benefit. Examples were constantly drawn from the laboratory, from the literature, and the project itself.

A laboratory was set up whereby the participants could specify and instrument the procedures discussed.

Despite the fact that the course is now over, many of the former participants are now coming to the classroom on their own time to discuss the material and its relation to their work.

Both courses included in their instructional procedures, the contents of the other. The environmental design course, for example, involved programmed units, and the behavior analysis course used visual and other aids stressing its relation to the social and physical ecology. Some of the lectures were telephoned, or taped, and the relationship of such methods of presentation to learning and consequences was discussed.

FRANKLIN HALL FLOOR PLAN



A - Program Checking

B - Testing Booths

C - Self-Study Area

D - Principal Investigator

E - Library

F - Secretary and Lounge Control

G - Conference and Control

H- Lounge

I - Student Private Offices

J - Storage

K - Lavatory

L - Stairway

NOTE: All Equipment and Work Surface Details Omitted for Clarity.

APPENDIX B

List of Photographs

I. Officer's Control Desk

II. Program Reivew Desk

III. Group Self Directed Study Area

IV. Private Student Office

V. Visual Display Announcing Two New Classes

VI. Classroom - Space Geometry

VII. Classroom - Self Directed Study

VIII. Library

IX. Lounge Entrance Control Center

X. Data Control Center

NOTE: Photograph locations designated by corresponding Roman numerals and directions on floor plan of Franklin Hall.

Example: IV

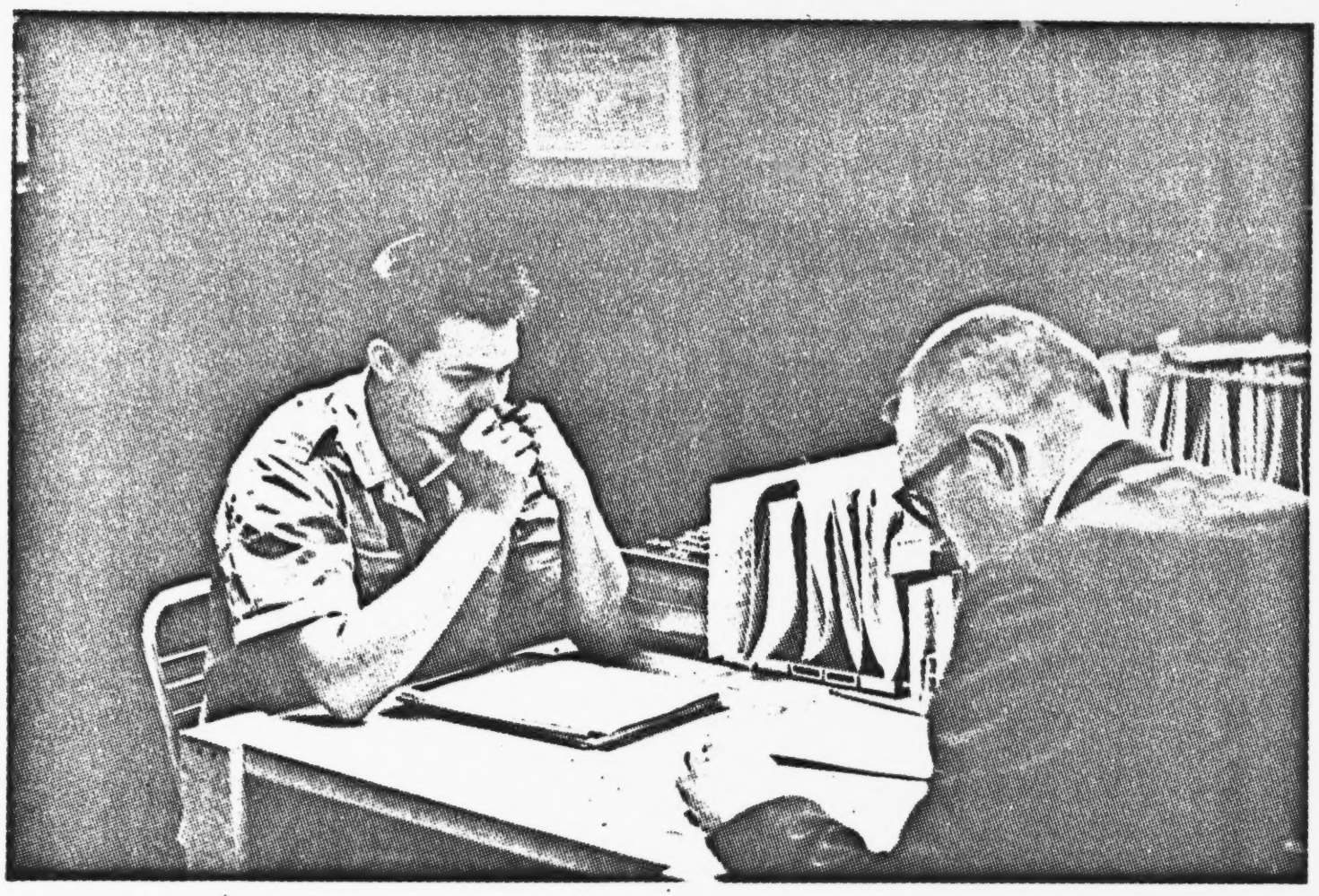
OFFICER'S CONTROL DESK I

The correctional officer is the main distributor of educational material. The student submits to the correctional officer requests to work on a section of a programmed course, a reading book, admission to class, purchase of lounge entrance, and smoke break, etc. He is also one of the individuals who checks the program self-study material for correct answers. He also gives out the tests which are taken in the testing booths seen directly behind and to the right in the above photo.

On the desk of the correctional officer are all educational work materials (programs and tests) for that day. These are fully visible and available on his desk in a pendaflex file.

Although we have not yet found a way to measure objectively the image change--from an individual who gives out punishment and checks discipline to an individual who gives out the material and corrects the material that eventually ends up in points (money)--it appears that the correctional officer in CASE is regarded as the "MAN" who helps the student earn and learn.

PROGRAM REVIEW DESK II

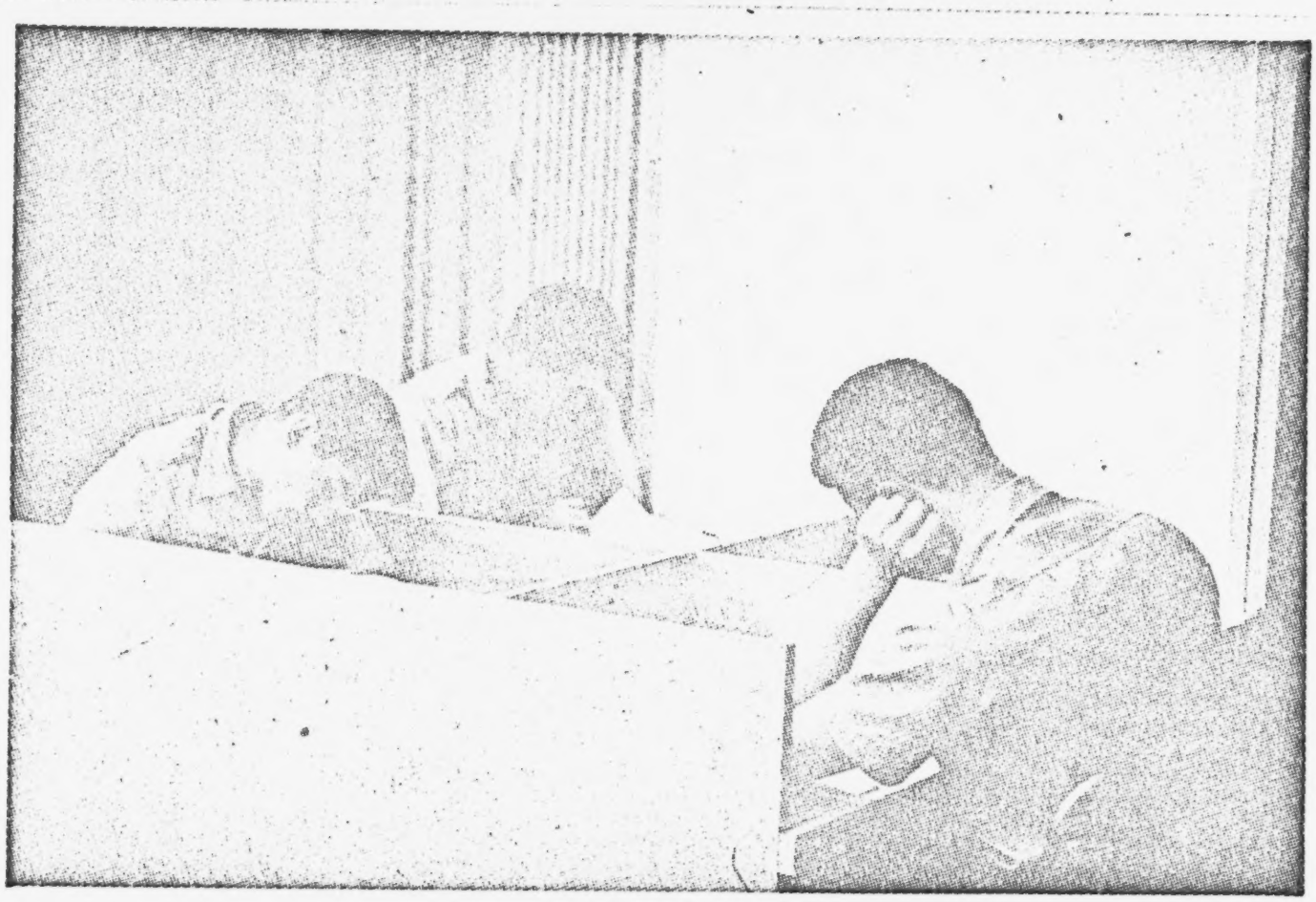


The staff at this desk located in the educational area carries out the same functions as the correctional officer, with the following additional services: Review of work done for the past few days; suggestions as to new programs that are available; changes in program material if the student is progressing too slowly (making larger than a 10% error rate in his linear program test questions), moving at a rapid rate, indicating a need for a post-test, a more difficult program, or a branching to a regular text or semi-programmed text, giving out of classroom materials; and so on.

All final exams, that are not taken on the automatic testing equipment, located in each testing booth, i.e., essay questions, are gone over by the CASE staff at this desk.

All recording of educational time, testing time, waiting for a booth--all data relevant to the educational activity is recorded and kept here.

GROUP SELF DIRECTED STUDY AREA III



In the self-directed study areas, the students work on their own on programmed instructional units of study in areas such as: spelling, punctuation, grammar, reading, elementary and advanced arithmetic, algebra, and general science.

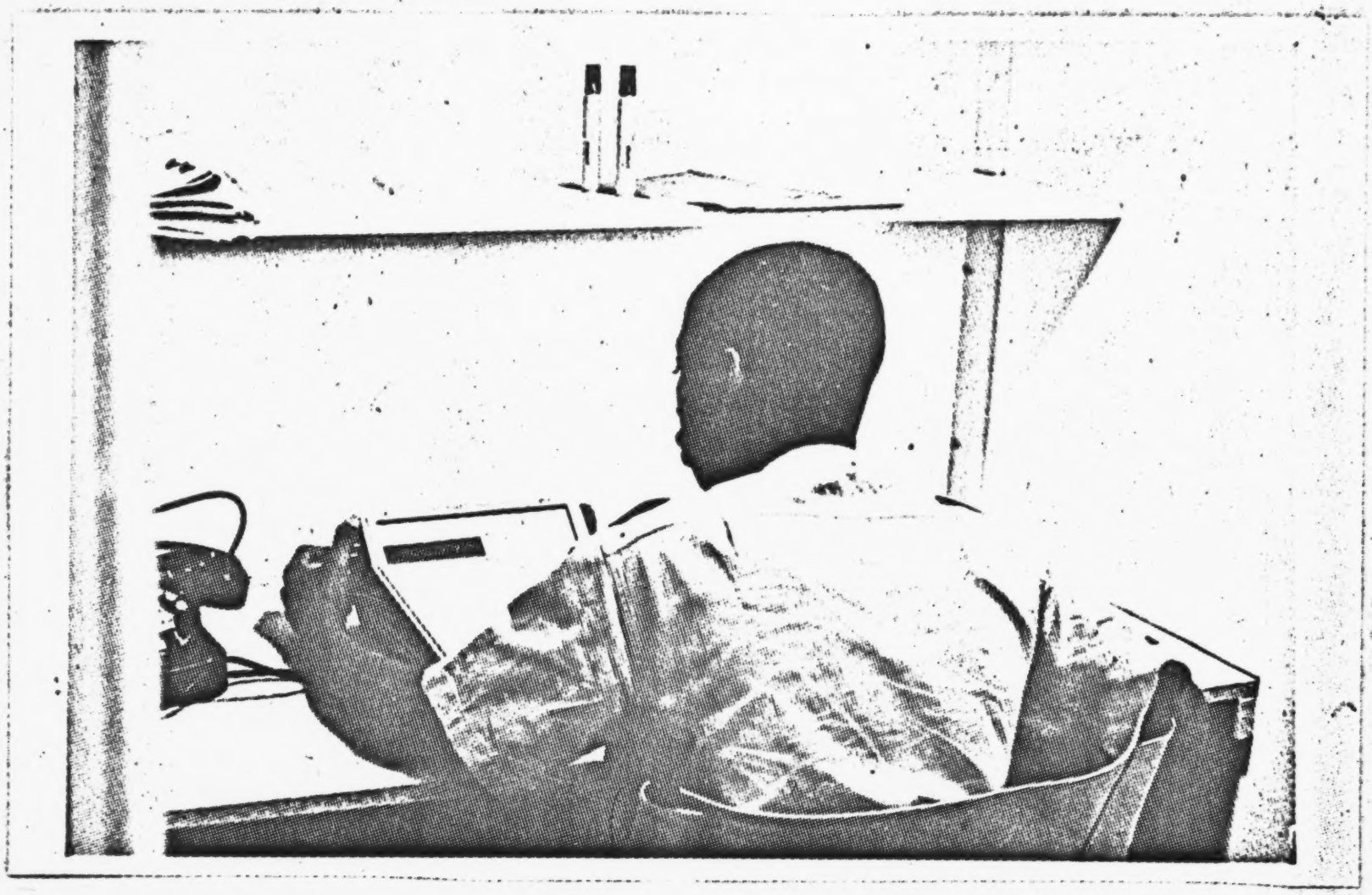
An initial battery of tests was given to each student when he joined the project. The student's major areas of deficit were recognized and he was accordingly assigned to a general area of programmed instructional study. As the student's abilities advanced, he was given material which branched out from the original area of concentration into new areas that he could then cope with.

The student may study or rest as he pleases; however, the points which purchase all reinforcers may be earned only through 90% accuracy on the student's study programs.

The student keeps all his personal time and program progress data for the project (which is, of course, checked by the staff when posted as final records). He is thereby directed to keep his own record of his progress in program, time spent, and points earned which does not allow him to lose contact with those factors most important to him in the program.

The folding screen visible in the above photograph encloses a larger study area which is employed for "live teacher" classes as well.

PRIVATE STUDENT OFFICE IV



OFFICE RENTAL: Cost 200 pts. per week
50 pts. per day

RENTALS MUST BE PLACED BY FRIDAY PRIOR TO WEEK USED

Each office is a celotex and novoply booth designed and built in multiples of 4 in the existing old shower room. Each office has a clip-on light, a phone (the phone is connected to our own CASE control panel), a desk surface, a chair, a dictionary, and colored pens. The student may smoke in his office, but he may not drink or eat in his office.

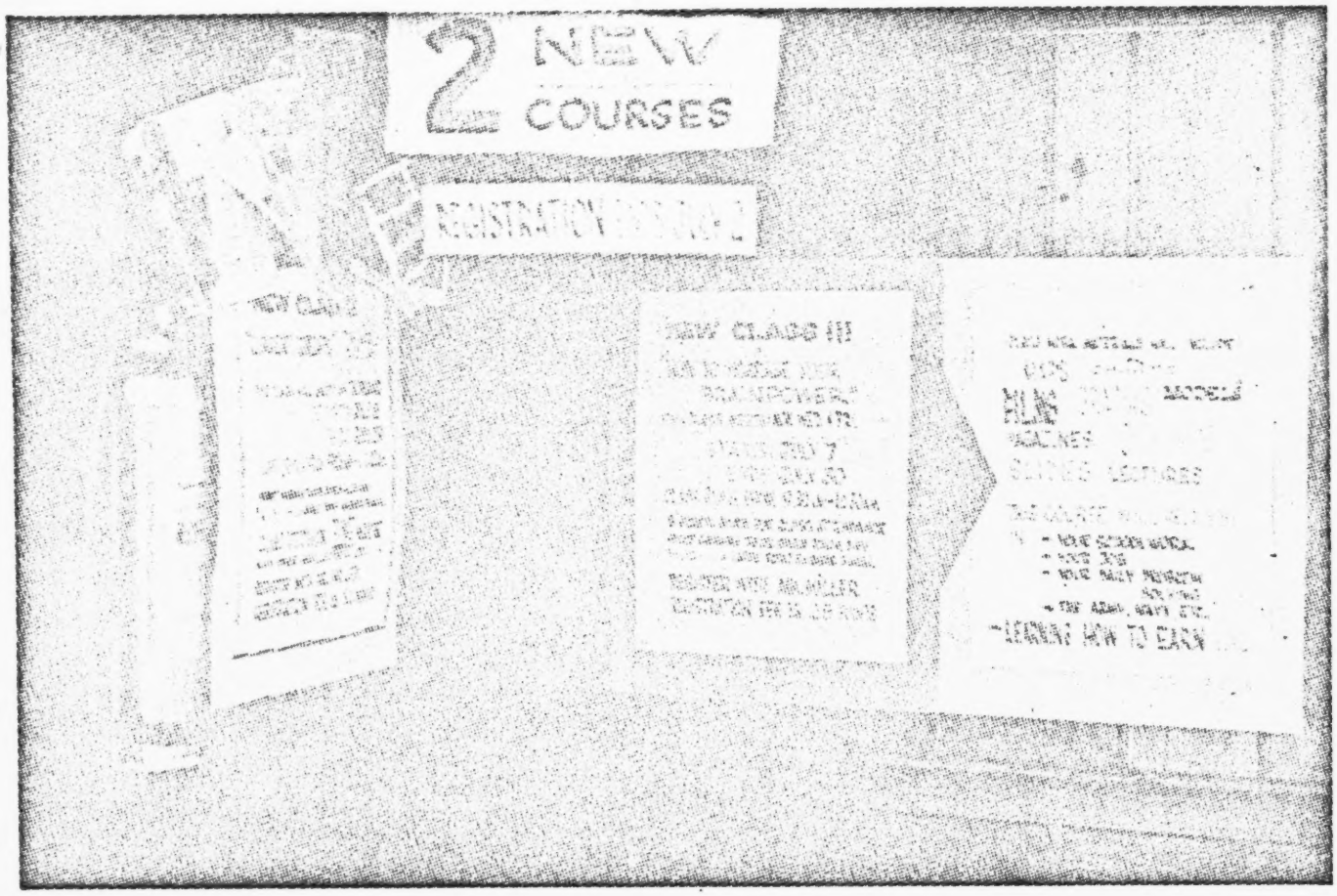
He must maintain a minimum grade of 90% on all final exams. If he falls below this level of post-testing, he cannot rent an office. If he does between 95% and 99% on a final exam and is renting an office, he receives an additional .5 multiple on points earned for that exam. If he receives 100% on any exam taken while renting an office, we double the points normally given for that exam.

Each student's name is lettered on a card and pinned to his office wall.

One student has rented an office 6 times in a row and as a surprise gift, the staff presented him with a ballpoint pen, a calendar, and a desk blotter. These three items were identical to the ones used by the CASE director and the staff.

In order to understand the cost to earning power ratio for an office, consider an individual in Washington, D.C., earning $60 a week and spending $40 a week for his house rental.

VISUAL DISPLAY ANNOUNCING TWO NEW CLASSES V



This photograph shows a display employed to announce the initiation of two recently introduced "live teacher" (as opposed to programmed instruction) courses. Thus far in the project, there have been four such "live teacher" courses given. They are:

"Road and World Atlas"---A course in which general objectives were: the ability to read world, hemispherical, and local maps; the correlation of cultural and historical facts with their physical location; and the ability to translate two-dimensional mapping procedures to the three-dimensional globe.

"Space Geometry"---A course in which objectives were: to define rationally number systems, to show the relationship between two and three-dimensional numbers, and to describe the basis for solid geometrical objects in space by planar and vector analysis.

"Current Events"---A course which employs Time magazine as a basis for the analysis of current events and also the study of English language meaning.

"How to Increase Your Brainpower"---A course which teaches problem-solving ability in the areas of: English, spelling and grammar; word and graphic problems in mathematics; and reference book useage.

VISUAL DISPLAY ANNOUNCING TWO NEW CLASSES (PAGE 2)

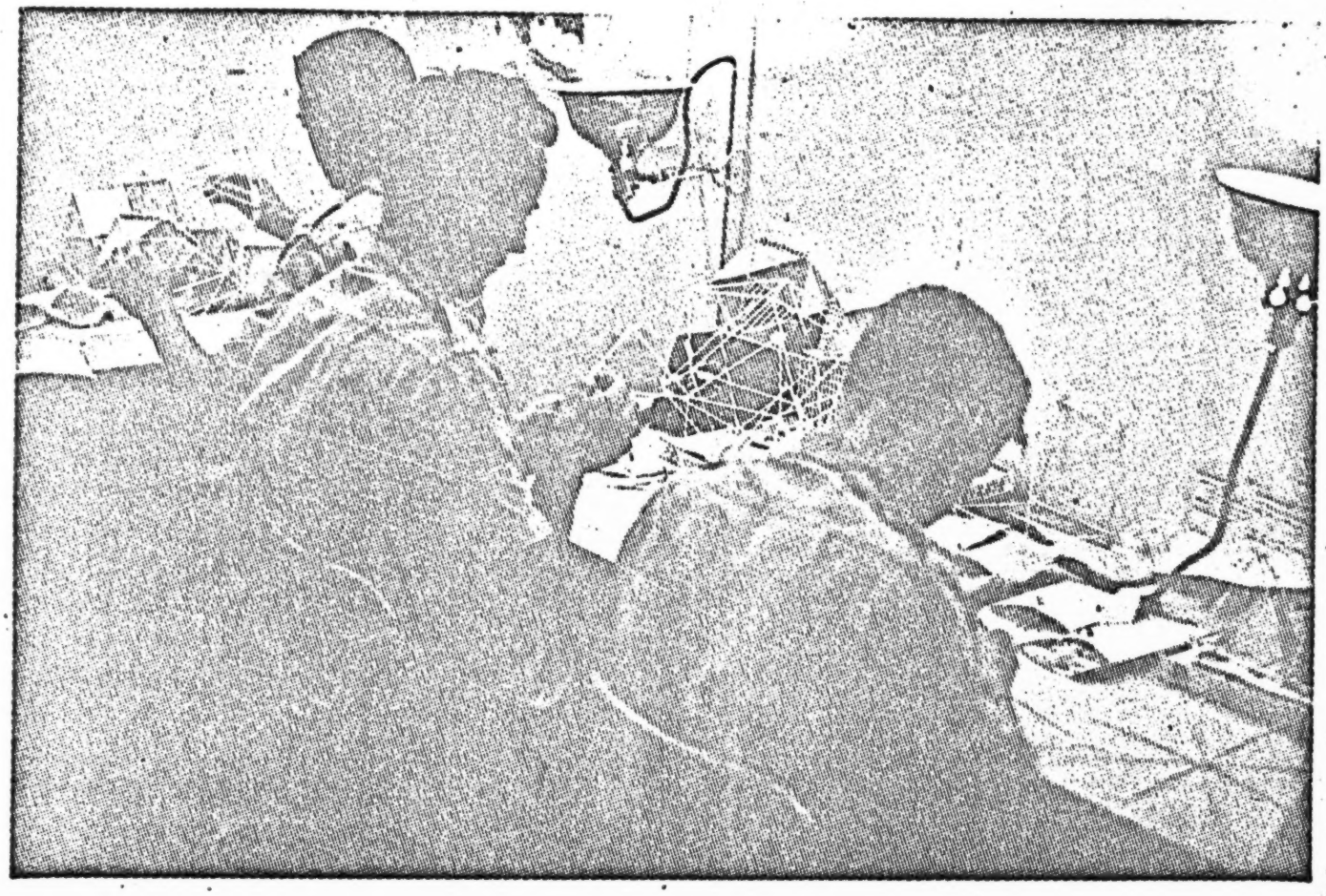
The utilization of these selected "live teacher" courses in conjunction with the media of programmed instruction appears positively to effect the rate of study time for all students.

All students who wished to take these courses had to pay a registration fee of 25 or 50 points. This procedure is comparable to the outside world wherein one pays for instruction.

This photograph shows a unit of the "Space Geometry" course in session. Each of the "live teacher" courses required an abundance of demonstrated proficiency in each unit by each student. They were designed as laboratory classes rather than lectures.

During the period that these classes were run, it became quite evident that the "live teacher" can indeed be an effective and powerful controlling variable in the learning process. The staff teachers were careful and as much as possible guarded against favoritism or reinforcement by any means other than by correct educational behavior.

CLASSROOM - SELF-DIRECTED STUDY VII

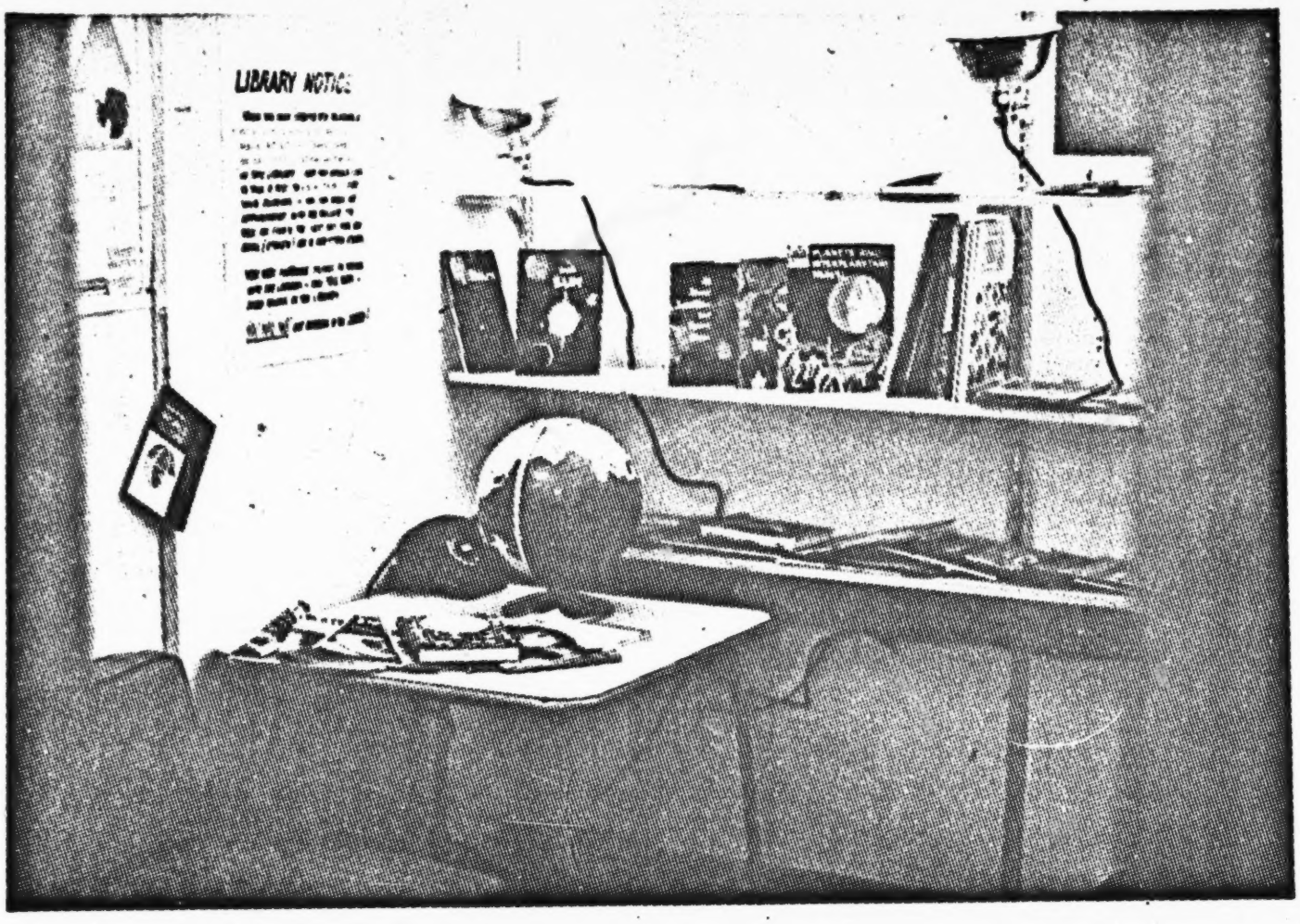


This photograph shows students who are engaged in a program of self-directed study tended toward fulfillment of requirements in the "Space Geometry": course.

The activity pictured here is the building of three-dimensional models and vector studies of the five platonic solids in geometry. The students were told that they could work in these if they so chose. No direct requirement was implied. However, every student in the class finished the building of these models on his own time with no indication that he would receive points for their successful completion. When the students had completed the models, they were all graded and high point credit was given.

Our records show that after the above procedure was employed for reinforcing self-study, a greater incidence of self-study prior to regular programmed instruction unit and final tests has been found.

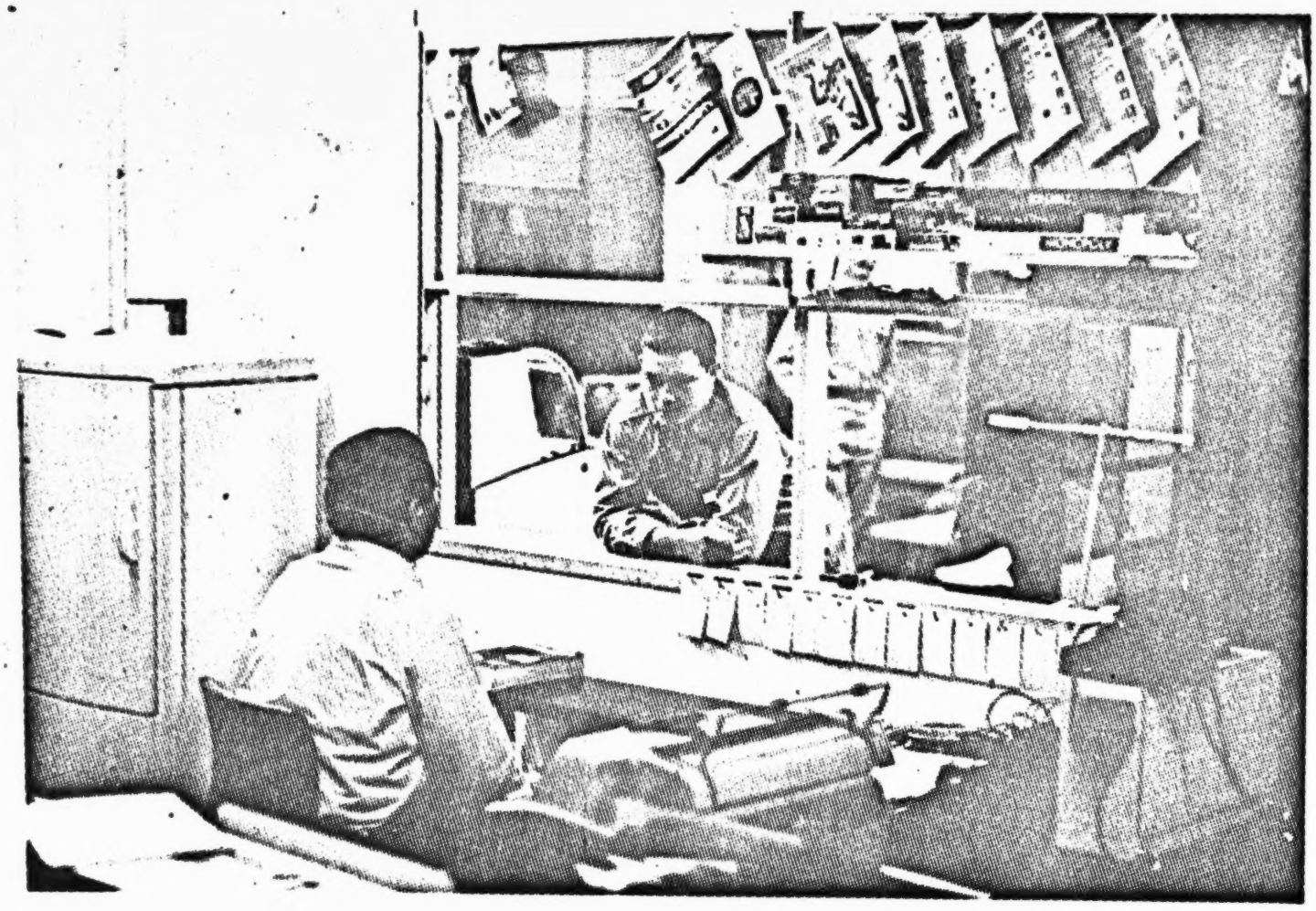
LIBRARY VIII



The library was initiated to provide a quiet area in which the students could purchase leisure time to read general interest books, newspapers, and magazines. The library contains these materials plus curriculum oriented reference books, maps, globes, three-dimensional models, and other materials pertinent and reinforcing to the student's educational activities.

Initially, entrance into the library could be purchased for a low point value (½ the daily price of the lounge) which allowed the student to remain, if he desired, for the entire day. This was done to provide a desirable leisure time alternative to the lounge. The point entrance requirement for the library has gradually increased to the point where it is now 5/8 of the daily price of the lounge. The manipulation of the interactive library and lounge price schedules has been shown to be an effective variable in the maintenance of high rates of program study time.

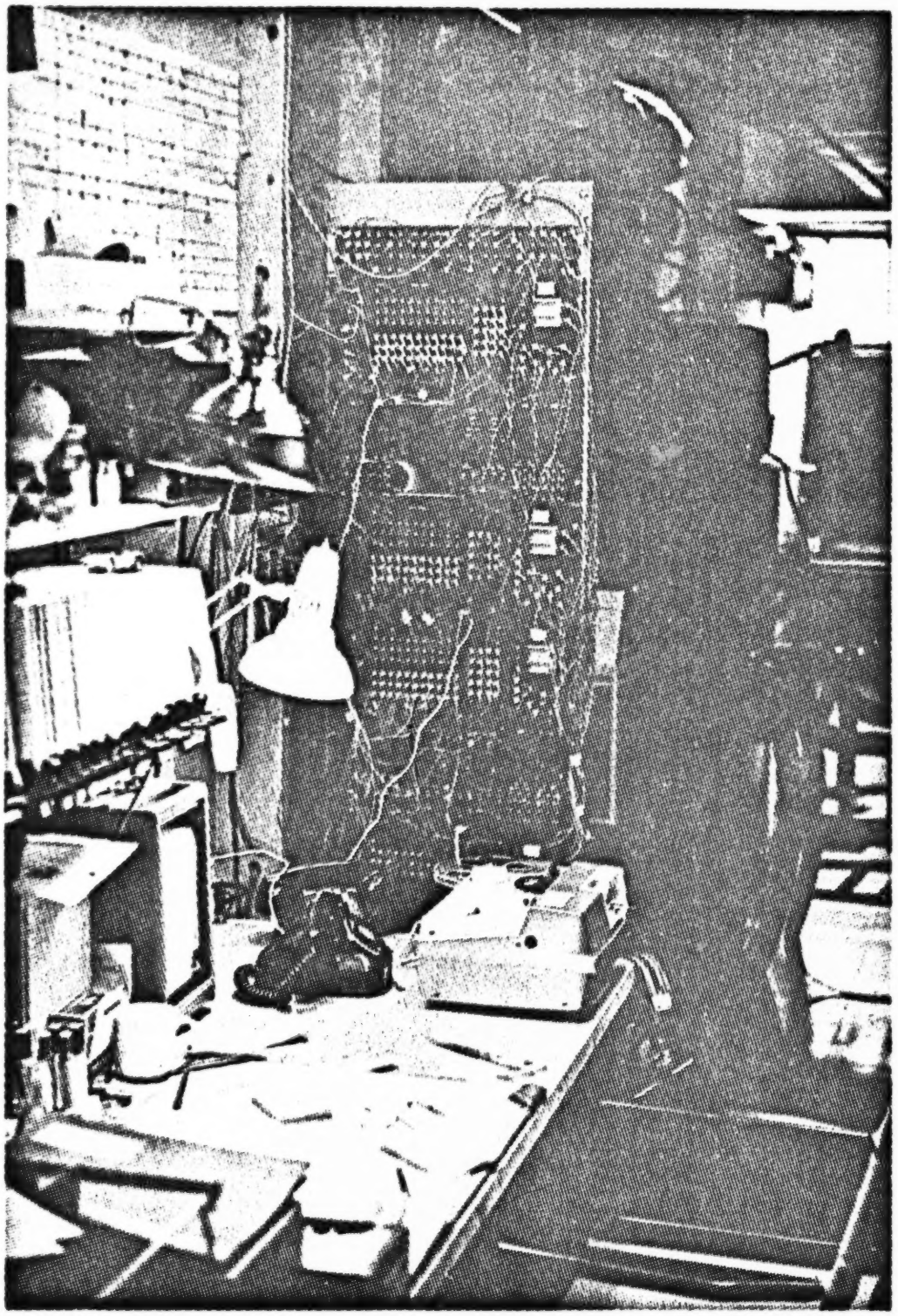
Further, extra points may be earned in the library by the student if he requests to be tested on any material he has read or studied.



All records and controls appropriate to leisure activities are handled from this station. These include entrance to the lounge, library, bathroom, and study break. Upon entrance into the lounge, the student makes all purchases of food, drinks, clothing, models, and other personal items from the window shown above. He also secures rental of entertainment equipment, games, locker space, etc., from this window. The student is required to make all requests for these items in writing.

The banking system for the students points is also continuously controlled from this station to insure that the student may have a visual record of his earnings and spendings. An inter-office and outside telephone switchboard is located and operated from this station.

DATA CONTROL CENTER X



The Data Control Center is located physically behind the testing booths, classroom, and self-study area, and staff offices. From this location it controls all data functions appropriate to the behaviors carried out within these areas.

The tall relay control rack located in the center of the photograph is the source of control for most functions described here. This rack contains the programming mechanism for the operation of the multiple-choice teaching/testing system employed in the testing booths. A twenty pen event recorder attached to the testing system provides an accurate means of analyzing the answers given to all questions in terms of correctness, hesitation (prior and after), duration, partial knowledge, etc.

DATA CONTROL CENTER (PAGE 2)

Further, the relay rack controls all inter-project communication systems (telephone), all audio and visual presentation devices, all audio recording equipment, and provides a power source for equipment employed in the staff training course in behavior analysis.

All "pencil and paper" data are recorded from this station and all project records are analyzed here.

APPENDIX C

Measuring Educational and Attitudinal Behaviors

<u>Measuring Educational Behaviors</u>

To measure change in educational behaviors, all students were given a battery of verbal and visual tests prior to their starting the CASE project, and will be given the same battery as a post-test.

The following systems are being used to measure correct educational responses during the program.

a. The fill-in blank system used in linear programming, i.e., TMI programs, checked by CASE Staff.

b. Multiple choice fill-in, checked by other students and then by CASE Staff.

c. Multiple choice - 5 choices - no fill-in, checked by a machine which records incorrect responses and does not permit the student to move on to the next question until the correct response is registered.

d. Written paragraphs in response to programmed questions, checked by CASE Staff.

e. Oral presentation of material requested by a written or oral procedure; done by phone, recorder, and classroom activity; checked by CASE Staff.

f. Group tests in class designed to measure group response.

g. <u>All</u> students taking any part of a programmed instruction course receive a pre- and post-test of the complete program and a pre- and post-test of each section.

Measuring attitudinal behaviors

To help us measure any change in attitudinal behaviors, we have instituted as part of our experimental design the following:

1. Psychiatric Interviews.

a. A recorded interview with a private consulting psychiatrist (not attached to any Government operation) was taken and typed up at the beginning of the project. A report from the psychiatrist on each student was filed.

b. At the end of Stage 1 CASE, the same private consulting psychiatrist will interview each student-inmate; we will record and type up the interview, and he will file a report on each.

NOTE: At no time will the psychiatrist have seen these boys other than pre- and post-time of CASE operation.

2. Verbal behavior rating scale.

a. A recorded interview as taken of each student-inmate with the Director of CASE. Another consulting experimental psychiatrist selected 25 words, in sentence context, to be rated by the student using a 7 scale, 20 unit semantic differential procedure. These 25, plus another 100 general terms, were selected and were also rated by each student-inmate. * These were then scored and fed into a computer. We have a complete print-out for each student.

b. The same procedure will be done as a post-test.

*This entire service was given for use as part of another research project carried out by Dr. Miles Miller, Walter Reed Army Research.

3. Outside correctional officer's report

Each day, the cottage correctional officer receives a

specially designed grading and time/activity measurement sheet to be filled out for each student-inmate assigned to CASE.

He also rates some of the attitudinal behaviors according to a 7 scale differential.

He also writes a sentence or two on any changes he observes.

Our own correctional officer meets with the cottage officers at least once a week for about 30 minutes. This is done by his attending a regularly scheduled counselor's review session, now in operation at the NTSB.

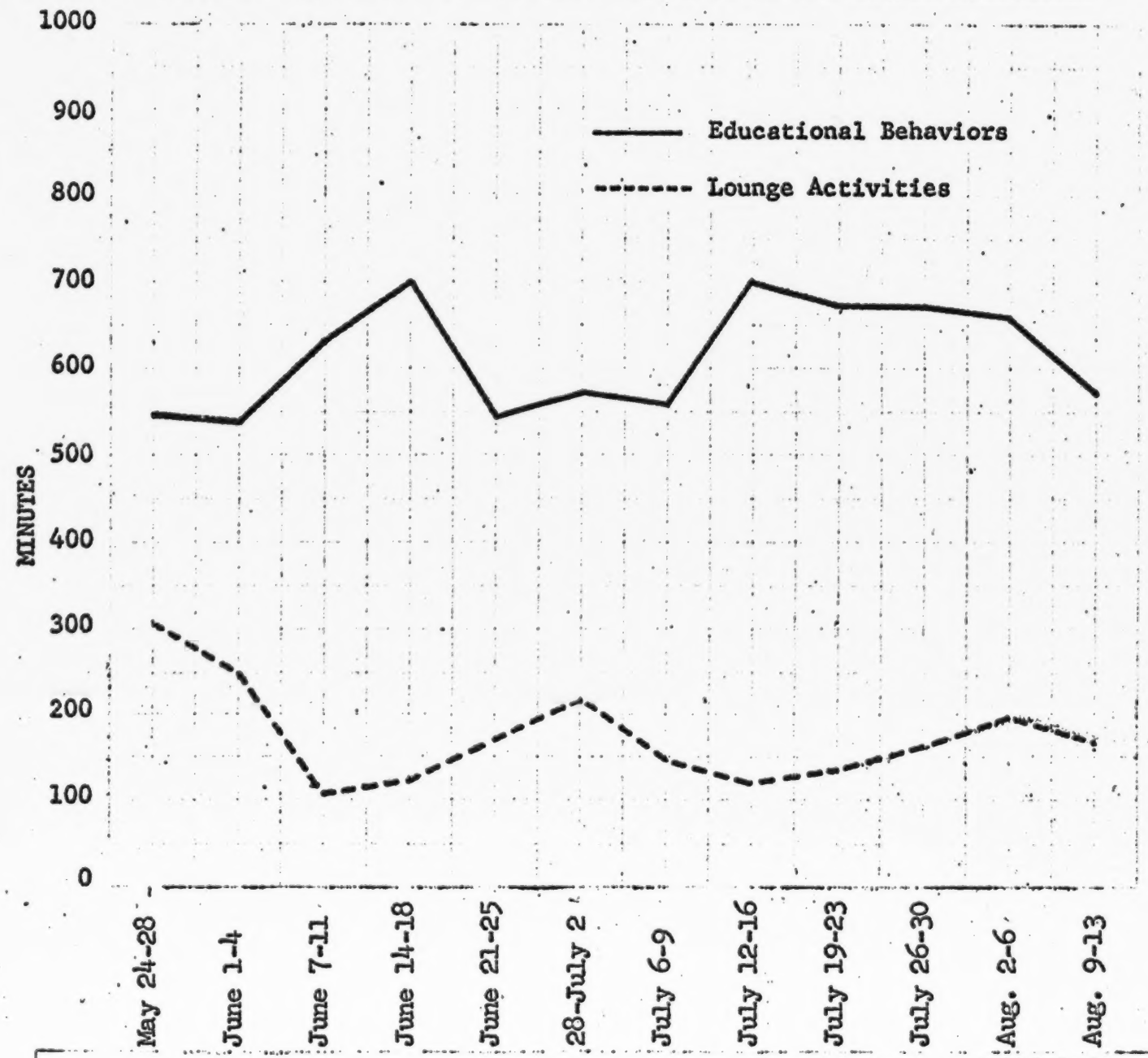
APPENDIX D

List of Tables and Illustrations

1. Weekly average of time spent on educational behaviors and lounge activities - Total Student Population.
2. Weekly totals of time spent on educational behaviors and lounge activities - Individual Students.
3. Average daily time spent on educational materials by CASE students.
4. Daily lounge population - June 7 thru July 21.
5. List of programs used.
6. Results of training using programmed instruction: change in error rate.
7. Maps and globes final examination scores.
8. Maps and globes final examination (visual presentation sheet).
9. Stanford Achievement Test - Average Grades of CASE Students.
10. Stanford Achievement Test - CASE Student Performance in Paragraph Meaning, Spelling, and Word Meaning.

TOTAL STUDENT POPULATION

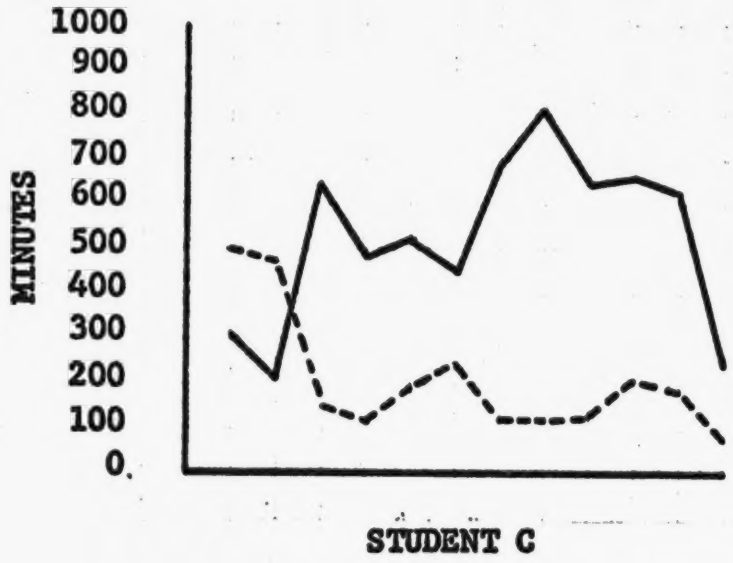
WEEKLY AVERAGE OF TIME SPENT ON EDUCATIONAL BEHAVIORS AND LOUNGE ACTIVITIES



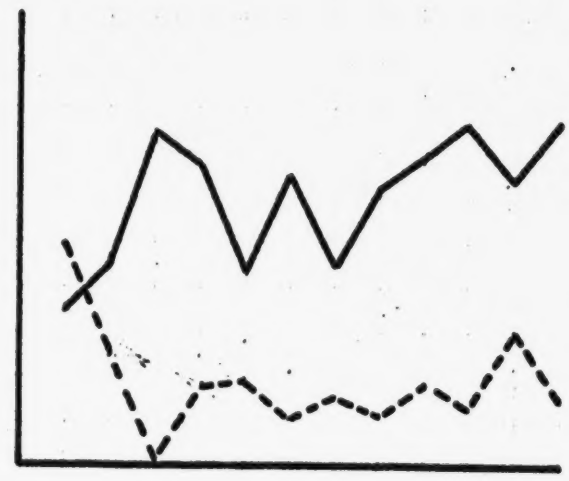
It is interesting to note that after a baseline has been established, the introduction of new contingencies are directly reflected in work and lounge behaviors. For example, on July 12, two four-week courses were made available and 75% of the students registered and paid. These additional classes did not appreciably increase their weekly pay at the start, but towards the end of the classes, a higher earning was noted (getting higher grades on their exams). This, plus a high paying final exam, generally raised the take home pay. This increased wealth is reflected in the use of leisure time.

On Thursday, August 5, the students were all given an SAT test, with a point payoff for all correct responses. This newly earned wealth doubled their normal weekly earnings and this new affluence was reflected in their high rate of spending and a drop in time spent on educational behaviors. During this week one boy decided to test his freedom and chose not to work for three mornings running. He sat or slept on the free wooden bench provided for such an event.

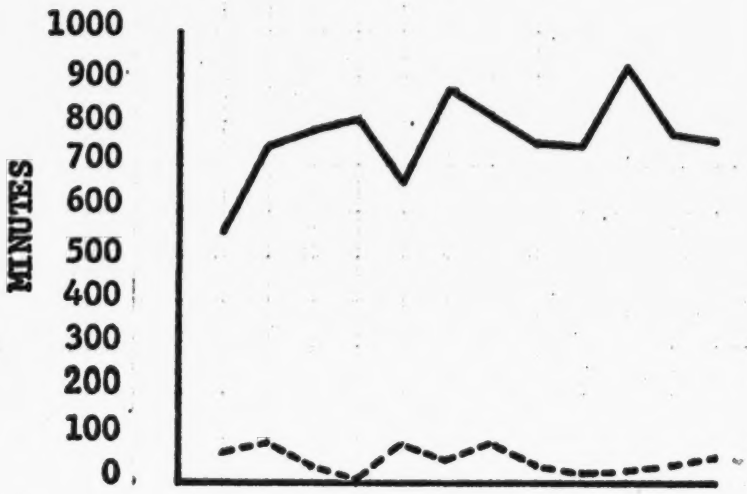
WEEKLY TOTALS OF TIME SPENT ON EDUCATIONAL BEHAVIORS AND LOUNGE ACTIVITIES



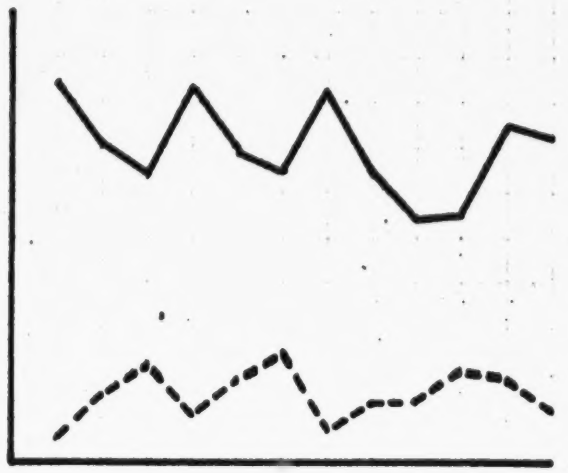
STUDENT C



STUDENT G



STUDENT S



STUDENT W

May 24-28
June 1- 4
June 7-11
June 14-18
June 21-25
June 28-July2
July 6-9
July 12-16
July 19-23
July 26-30
Aug 2-6
Aug 9-13

———— Educational Behaviors
- - - - - - Lounge Activities

See following page for explanation

WEEKLY TOTALS OF TIME SPENT ON EDUCATIONAL BEHAVIORS
AND LOUNGE ACTIVITIES

Students C and G.

Students C and G are typical of one group that spent more time in leisure activity during the first nine weeks than they spent in educational work. Note the effect of a price increase for admission to the lounge (on June 7). Having the point learning ratio remaining generally the same, but having lounge price inflated, the boys were encouraged to spend (a) more hours on educational activity in order to afford this high price luxury, and (b) to go into the lounge at a later hour when the price drops.

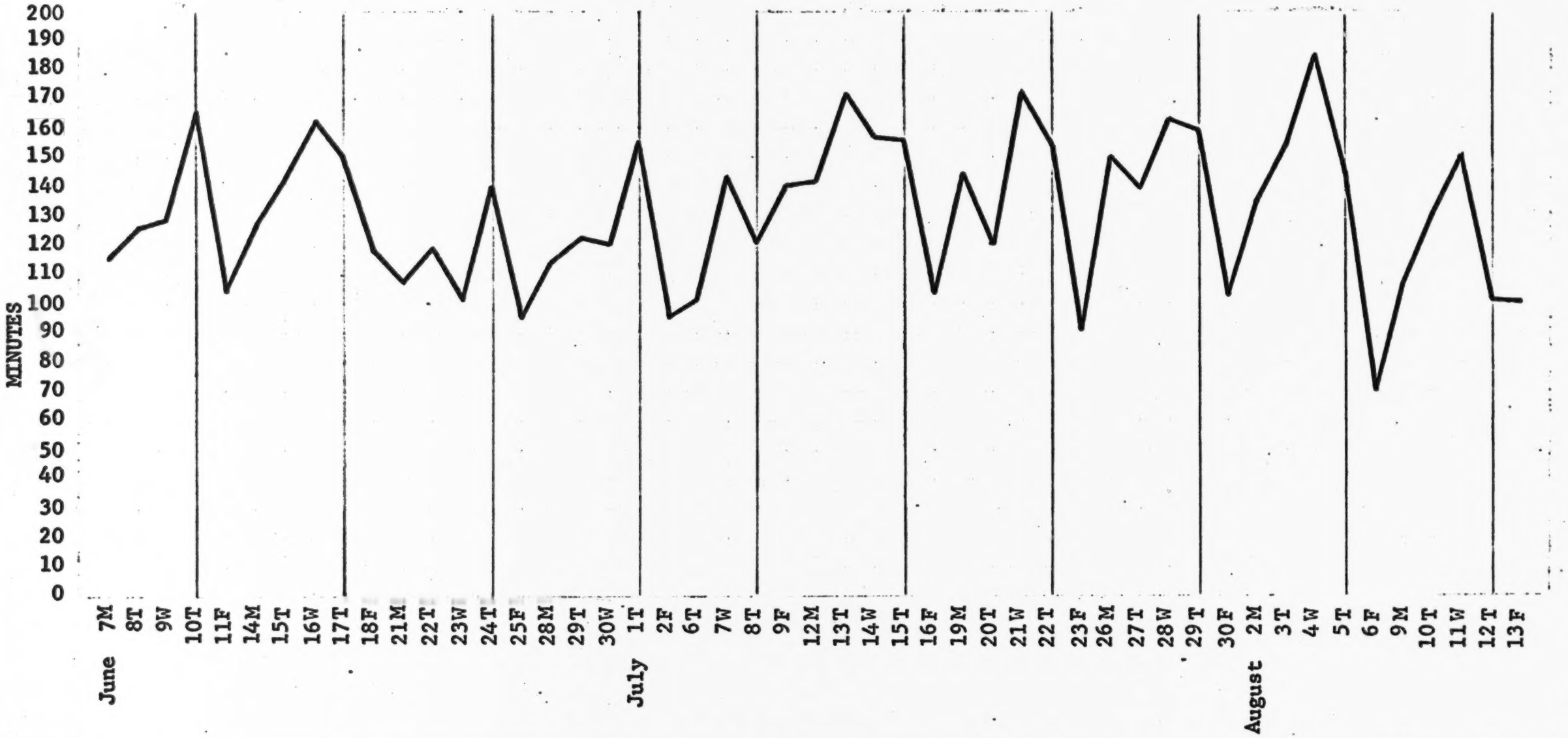
During this last week (of August 9-13), Student C decided not to work for three mornings running. He sat or slept on the wooden bench provided for this purpose. He was broke, having splurged at the beginning of the week and could not pay for entrance into the lounge.

Students S and W.

Students S and W are typical of the other major group. This group responded by increasing their educational work until the work-leisure pattern was established. They minimally reflect the contingency changes--but generally reflect a higher level of intrinsic reinforcement. One has rented an office for 11 weeks and has purchased a chicken for a pet. He spends his time working for high grades and supporting his office at 200 points per week.

Student W has moved into the high level maths--including algebra. He is maintained by trying to get between 95 and 100% correct on all his exams. His final part one of algebra was 99.3% correct.

AVERAGE DAILY TIME SPENT ON EDUCATIONAL MATERIALS BY C.A.S.E. STUDENTS



This chart presents a linear record of average daily time spent on educational materials by CASE students from June 7 through August 13. It is evident that the highest average daily time spent on education materials is on Wednesday and Thursday. During the entire period of time shown, the students were paid one week's points on Friday. This high work rate prior to payday (reinforcement) corresponds with the results obtained in operant laboratories that employ similar contingency schedules with their subjects. The abnormal fluctuation on August 4 represents a required exam session of 185 minutes (taking the SAT examination on Wednesday) and the following pay day (Friday) on which they gained their highest pay-off to date. This newly acquired wealth further appears to have disrupted the progression of ever increasing Wednesday-Thursday work time. To remove some of this wealth.from those who are being maintained on a work-for-pay plan, we have initiated a banking system with a 5.25% interest. This will remove some of the excess wealth and return the group to the previous pattern.

DAILY LOUNGE POPULATION - JUNE 7 thru AUGUST 13

		8:00	8:30	9:00	9:30	10:00	10:30	11:00	Total in Lounge	Total Students	Returns
JUNE	7					o	ooooo		6	13	
	8						ooo		3	15	
	9						ooooo		5	15	
	10						oooo		4	15	
	11		o		oo		oooooo		9	15	
	14					o	oooooooo		10	15	
	15						oooooo	o	7	15	
	16						ooo	o	4	15	
	17						ooooo		5	15	
	18				o		ooooo	o	12	15	
	21						ooooo	o	11	15	
	22						ooooo		10	15	
	23						ooooooo		7	14	
	24						oooooo	ooooo	12	14	
	25				o	oo	ooooo	o	14	14	
	28		oo				ooooooooo		11	13	
	29		oo				oooooooo		10	14	
	30						oooooo	o	7	13	
JULY	1						ooo		3	13	
	2		o		ooooo		oooooo		12	13	
	6				ooo		oooooo		9	13	
	7						ooooo		5	12	
	8		o				oo		3	12	
	9		oo		o		oooooooo	o	10	12	1 rtn
	12							oooooooo	8	12	
	13							ooooooo	7	13	
	14							ooooooo	7	14	
	15							ooooo	5	14	
	16		oooo	o			88888	oooo	14	14	4 rtns
	19		o				oo	ooooooo	10	14	1 rtn
	20						ooooo	oooooo	11	15	
	21							oooooo	6	15	
AUGUST	22		ooooo				ooo	ooo	6	15	
	23		ooooo		o			ooooo	11	15	
	26						o	oooooo	12	14	
	27		o		oo		ooooo	ooo	11	15	
	28							ooooooo	7	12	
	29							oooooo	6	15	
	30		ooooooo		o		oooooooo	ooo	14	15	5 rtns
	2						oooooo	ooooo	11	14	
	3						oooo	ooooooo	11	14	
	4							ooooooo	14	14	
	5						ooooo	o	6	15	
	6		888ooo		oo		o	ooo	15	15	
	9				ooooo	o	ooooooo	oo	12	15	3 rtns
	10			o			ooooooo	oo	10	15	
	11						o	oooo	5	14	
	12						88o	oooo	7	14	
	13				oo		ooooooo	ooooo	14	14	2 rtns

o = one student/inmate purchased entrance into lounge

DESCRIPTION OF CHART--DAILY LOUNGE POPULATION

Entrance to the lounge is contingent upon ability to pay the amount of points charged per hour. Prior to July 7, entrance to the lounge was 15 points, at any hour, for any length of time. Some students were not able to maintain a block of study time, but were affected by other boys leaving the self-study area, and by the noise level of the juke box and laughter that made its way back to the educational area.

The effect of a price raise and an hourly rate was to direct the student to wait for his reinforcement at a cheaper time and to plan a larger block of work time.

It was unnecessary to look at the clock at 10:30. The rush of boys buying entrance to the lounge was, figuratively speaking, like clockwork. This can be seen clearly on the chart from July 7 to July 9.

On July 12, we decided to try to increase the amount of study time and direct the boys to plan a 30-minute break per day. The result of the first week of no entrance until 11 a.m. is the result of stimulus change. The weeks that follow are starting to show a new pattern: more boys are willing to pay the high price on Friday at 8:30--some boys have shifted their time to 11:00 a.m. During this period--from July 6 to August 2, 12 students were registered in a class that met from 9:30 to 10:30 Monday-Wednesday-Friday, and three students were registered in a class from 9:00 to 11:00 on Thursday. These classes closed on August 2.

The students doubled their earning power during the last two weeks. This has begun to show in that the early entrance price of 30 points does not constitute the same level of high price as it did before.

This new price range will be maintained for the next six weeks, and at the same time the earning power will be returned to the previous rate. This schedule should produce a new baseline.

LIST OF PROGRAMS USED

TMI-Grolier Self-tutoring Programs

Spelling

Subject: Fundamentals of spelling. Vowel-consonant identification. Intensive practice on familiar spelling rules. Proofreading. Contractions. Homonyms. Basic rules for dictionary use.
Age Level: Third-grade reading knowledge recommended. Also used for remedial work through high school.

Punctuation

Subject: The use of punctuation in writing and proofreading. Use of capital letters. Comma. Semicolon. Dash. Parenthesis. Apostrophe. Question mark. Hyphen. Ellipsis. Period. Exclamation point.
Age Level: From seventh grade up.

Work and Machines

Subject: The ten-unit course covers: matter; energy and work; power and horsepower; introduction to machine: mechanical advantage; efficiency and friction; coefficient of friction; hydraulic machines; laws of motion; floating objects; Archimedes' Law; introduction to engines; transportation and engines.
Age Level: Junior High School. Review for higher grades

Addition and Subtraction Facts

Covers all addition and subtraction equations that contain numerals 10 and smaller. This content was chosen as representing the best foundation for more advanced work, and as demanding the minimum prerequisite knowledge.

Multiplication and Division

Subject: Basic concepts of multiplication and division. Basic number facts. The collection of equal subgroups into a larger group. The division of a group into equal subgroups. Basic number facts through 10×10 and $100 \div 10$. Multiplication and division signs. Multiplication and division equations from a pair of factors or a quotient and a divisor. Systematic review.
Age Level: Third-grade reading ability and knowledge of addition and subtraction are required. Excellent for higher grades.

Decimal Numbers

Subject: The study of decimal numbers and their use. How to add, subtract, multiply, and divide decimal numbers. Familiar examples, meanings, and applications of decimal numbers.
Age Level: Fourth grade reading level plus facility in fundamental arithmetic skills. Useful for higher grades.

Fractions	Subject: Basic concepts; unit and non-unit fractions; addition and subtraction of like and unlike fractions; mixed number and improper fractions; equivalent fractions; introduction to use of the number line. Age Level: Prerequisite, third-grade reading and arithmetic ability.
Introduction to Modern Mathematics	Subject: Designed to develop an appreciation of certain basic mathematical inter-relationships and to provide a foundation for mathematics curriculum based on a modern approach. A history of numeration; positional number systems with stress on binary and trinary systems; history of measurement; elementary set terminology. Age Level: Junior high school. Prerequisites: 7th-grade reading level and ability to perform the four fundamental arithmetical operations with whole numbers.
Fundamentals of Algebra	Subject: Beginning Algebra. Literal numbers. Algebraic notations for arithmetic operations. Evaluating formulas. Simplifying terms. Multiplication and division of monomials. Fundamental operations of equations. Exponents. Multiplying binomials. Factoring. Algebraic "short cuts" (but only after careful explanation of fundamentals). Age Levels: First semester students studying ninth- and tenth-grade algebra; brush-up for higher grades.

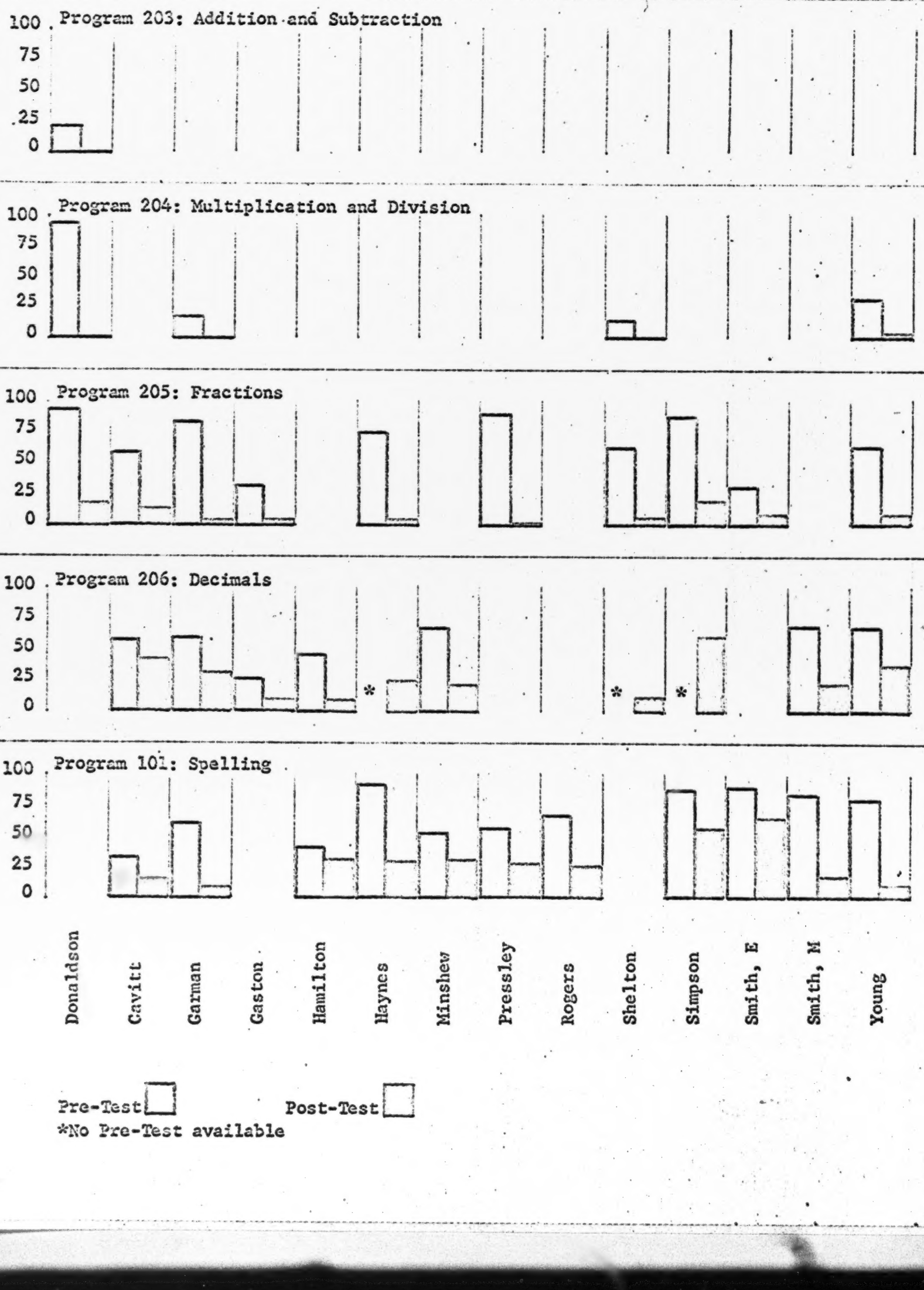
Other programs

Eng. 2200	Subject: Grammar and usage. Age Level: 7th - 9th grades.

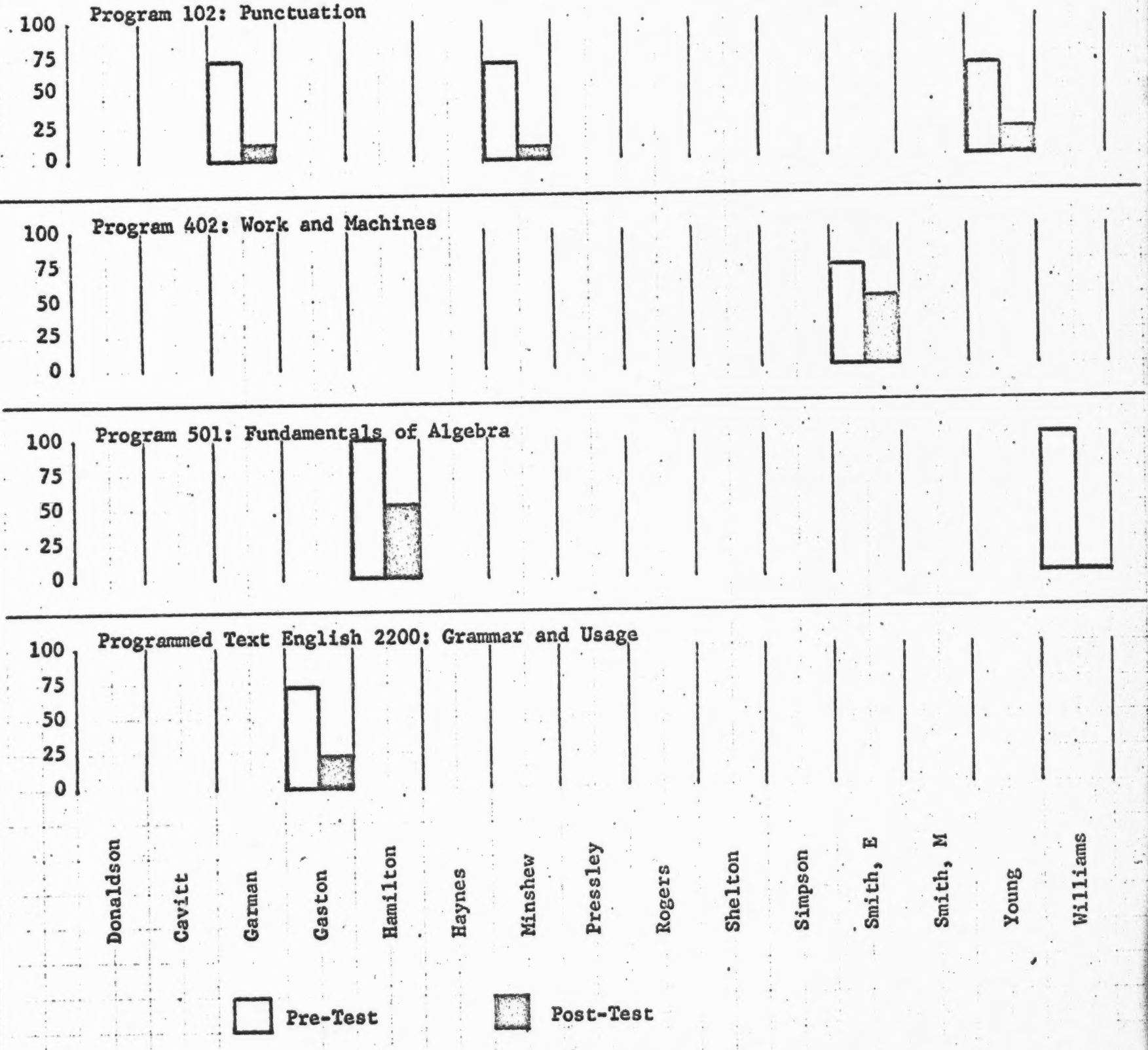
Reader's Digest Remedial Reading Program.

Other reading materials and programs.

RESULTS OF TRAINING USING PROGRAMMED INSTRUCTION: CHANGE IN ERROR RATE



RESULTS OF TRAINING USING PROGRAMMED INSTRUCTION: CHANGE IN ERROR RATE (Page 2)



Results of Training using Programmed Instruction: Change in Error Rate

The graphs illustrated on the previous pages outline the pre- and post-test error rates for a number of relevant programs. It is shown that not all students have taken all listed programs.

Certain of these programs were more successful than others in teaching their subject matter according to the test measures employed. For example, "Program 101: Spelling" shows a high error rate on post program testing.

It was noted by the instructors of the CASE project that the test employed for "Program 101: Spelling" tested for material other than that which appeared to be adequately covered in the program.

In contrast to the 101 Spelling program, "Program 204: Multiplication and Division" showed a significant decrease in post-test error rate for the four students who took the program.

"Program 501: Fundamentals of Algebra I" shows a large difference in the post-test error rates for the two boys who had sufficient background to take this program. It is interesting to note that the student whose post-program error rate approximated 50% of his pre-program error rate had taken numerous breaks in the 501 program as he neared its completion. These breaks consisted of branching to programs in other subject matter areas. The student whose post-program error rate was near 0% worked steadily with no branching. He took the post-test immediately after completion of the last unit.

Through keeping records of the errors made, CASE staff was able to discern the types of errors that students made. Consequently, the lack of clarity that sometimes appeared within the writing of the program became evident.

MAPS AND GLOBES FINAL EXAMINATION SCORES

Student	Part 1		Part 2		Part 3		Part 4		Overall Score		Change
	#1	#2	#1	#2	#1	#2	#1	#2	#1	#2	
Haynes	56%	76%	64%	68%	59%	70%	96%	92%	68%	76%	+ 8
Shelton	92%	96%	84%	92%	100%	100%	100%	100%	94%	97%	+ 3
Hamilton	100%	92%	84%	100%	100%	96%	91%	*	92%	96%	+ 4
Williams	76%	100%	84%	92%	92%	72%	99%	*	84%	88%	+ 4
Pressley	88%	92%	79%	76%	96%	88%	96%	88%	90%	86%	- 4
Garman	52%	60%	72%	80%	52%	68%	72%	*	59%	69%	+10
Gaston	88%	100%	88%	88%	100%	100%	96%	*	92%	96%	+ 4
Young	92%	84%	84%	88%	76%	92%	88%	84%	85%	87%	+ 2
Rogers	88%	88%	72%	88%	84%	92%	92%	*	81%	90%	+ 9

Note:
Course Final Exam (#1) given June 22 and (#2) given July 13.

*Student did not wish to take Part 4. Overall scores shown are the averages of Parts 1 through 3 only.

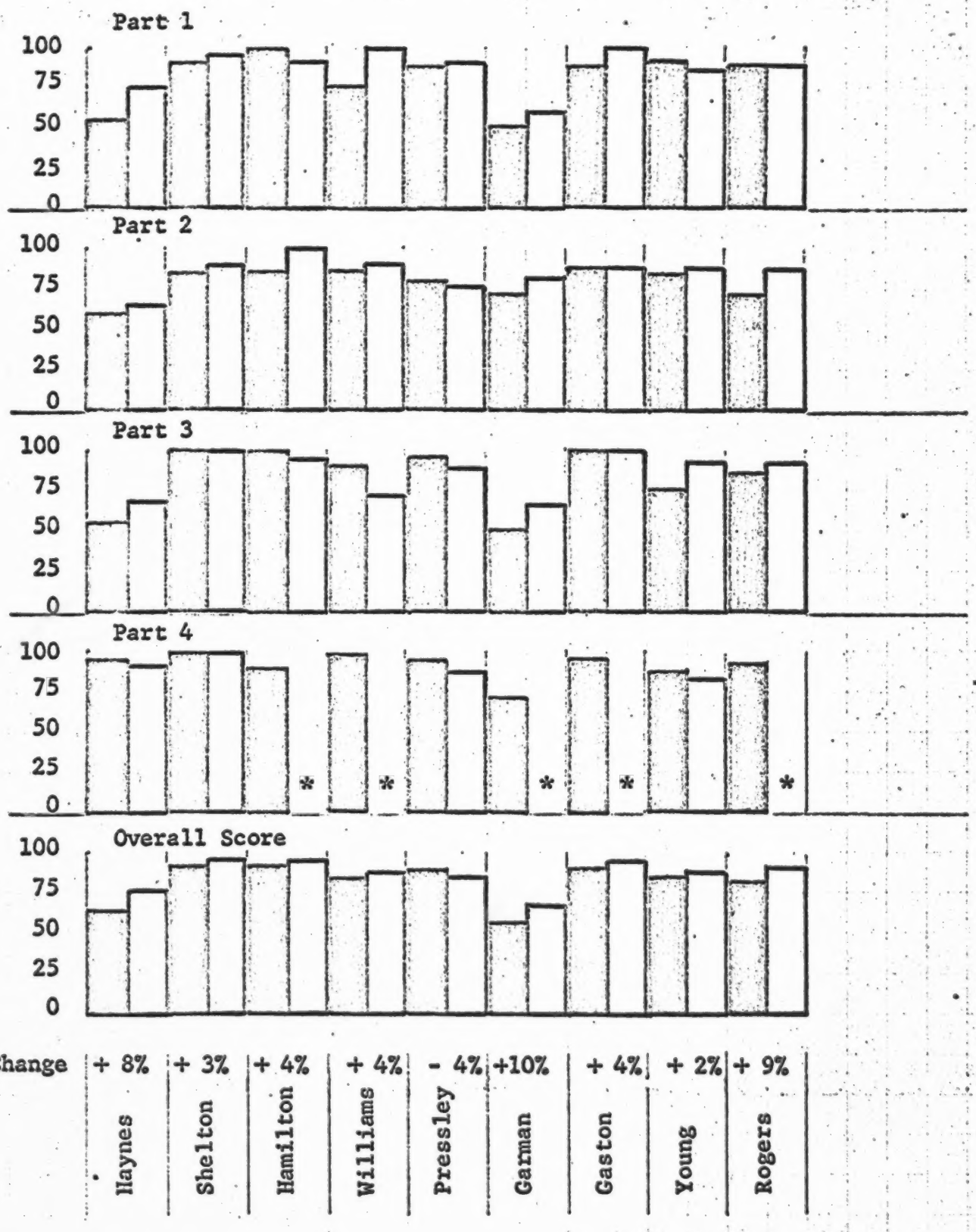
Nine students registered and paid for the course. The course curriculum covered such basic material as oceans, hemispheres, continents, latitude and longitude, concept of time and seasons derived from rotation of earth on axis and about the sun, solar calendar, national boundaries, etc. It also covered the use of different map projections, finding geographical locations by a coordinate system, using a world atlas to examine population distribution--mineral, vegetable, racial distribution, etc.

Each part of the exam had 25 multiple-choice fill-in blanks. Part I was directly keyed to a world map. Part II had questions referring to land masses, longitude, latitude, seasons, calendar, time and so forth. Part III had questions referring to location and description of nations, capitals, and historical data relevant to the discovery of America. Part IV was an exam taken from a programmed text on map reading.

It is interesting to note that the test scores on this same exam given three weeks later showed an increase in learning (a decrease in error rate) rather than a normal decrease. This occurred in all cases except one. However, this increase may be due to a psychological memory phenomenon recently reported in psychological journals.

A new exam covering the same general material will be given to these nine students by the middle of December. Consistent with presenting the second final exam, no advance notification will be given to the students.

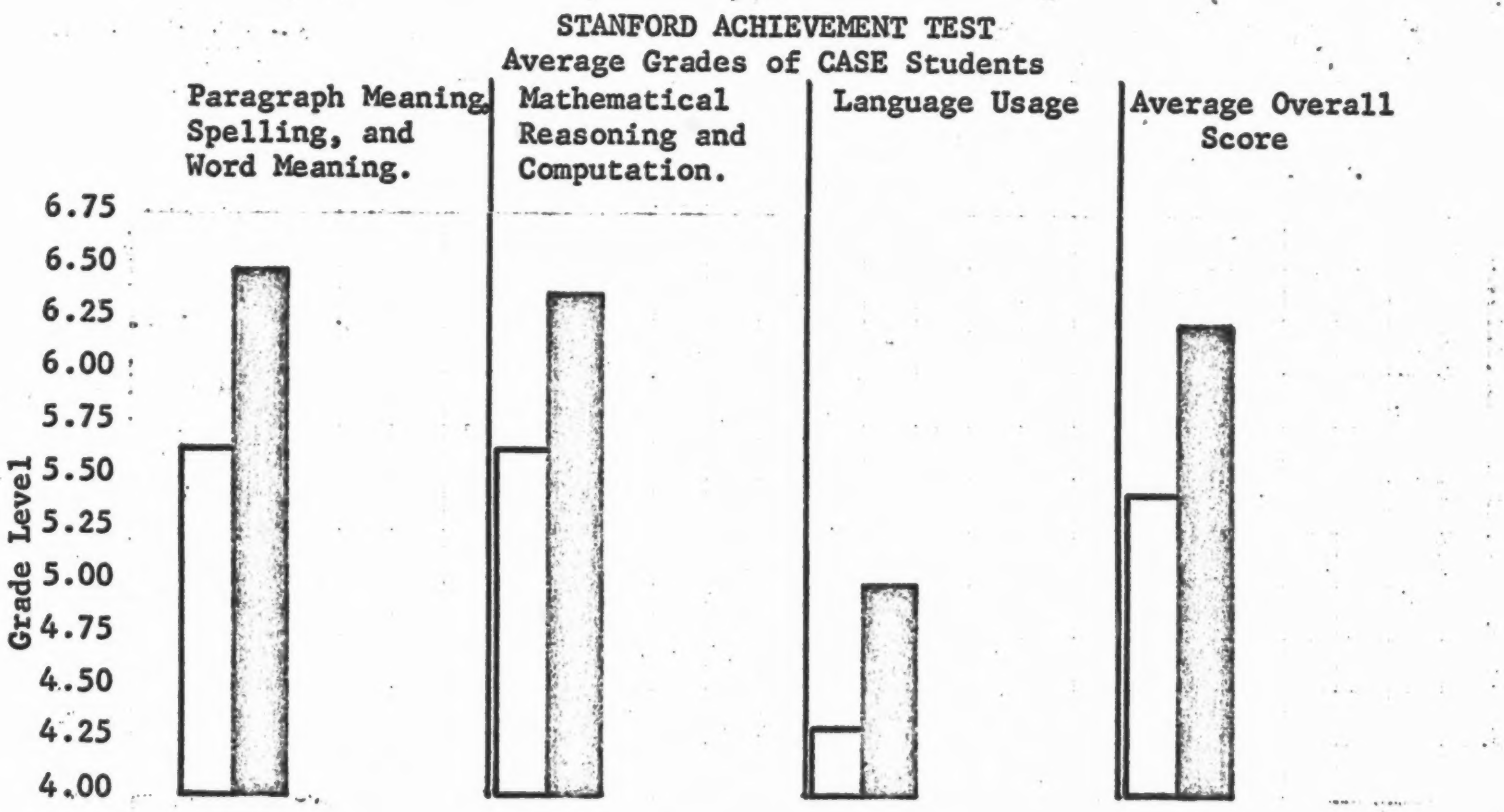
MAPS AND GLOBES FINAL EXAMINATION (Visual Presentation Sheet)



Final Examination (#1) Given June 22.

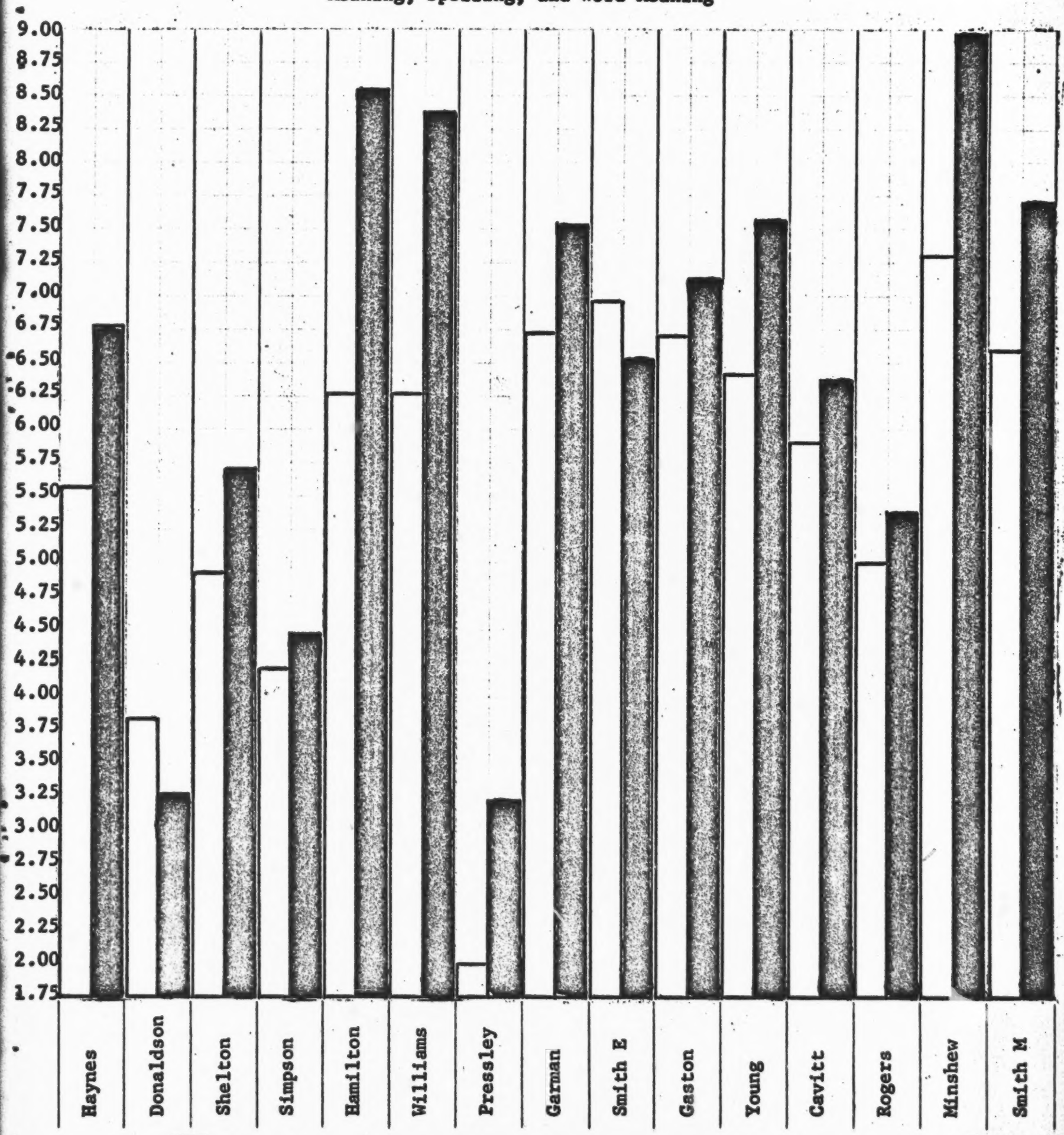
Final Examination (#2) given July 13.

*Students did not wish to take Part 4. Overall scores shown are the averages of Parts 1 through 3 only.



In the chart above these average figures indicate, in part, the degree to which the CASE project has provided for learning. The average Paragraph Meaning, Spelling, and Word Meaning score evaluates these students on subject matter areas for which CASE has offered the highest rates of reinforcement. The Mathematical Reasoning and Computation average represents the measure of subject matter capabilities that CASE reinforced at a lower rate than the average described previously. The Language Usage average indicates the measure of a subject matter unit CASE did not offer. The above described averages are the only subject areas covered by the S.A.T.(Intermediate--Short Form).

STANFORD ACHIEVEMENT TEST
CASE Student Performance in Paragraph Meaning, Spelling, and Word Meaning



S.A.T. given to students upon admission to National Training School.

S.A.T. given to students August 4, after an average of 18 weeks with the CASE Project.